

Bly Mountain/Swan Lake Rim/Whiteline Reservoir Forest Health and Woodland Treatments Environmental Assessment (No. OR014-99-6)

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Chapter One: Introduction

Overview

This environmental assessment (EA) addresses proposed forest and rangeland treatments on public lands administered by the Bureau of Land Management (BLM) (see table 1 below and maps in Appendix B).

Table 1 - Proposed Treatments in Bly Mountain, Swan Lake Rim, and Whiteline Reservoir Areas (Planned to occur approximately 1999-2005)							
Analyzed Treatment Area	Location			Total Acres of BLM Land In Treatment Area	Acres of BLM Land Being Considered For Commercial Timber Sale Treatment	Acres of BLM Land Being Considered For Noncommercial Treatment	Total Acres of BLM Land Being Considered For Either Commercial or Noncommercial Treatment
	T	R	Sections				
Bly Mtn	37S 38S 39S	11E 11E 11E	15,23,26,27,33-35 1-3,10-14,17,19-23,26-30,32,34,35 2	7,464	700 - 800	1,500 - 2,000	2,500 - 2,800
Swan Lake Rim	37S 37S 38S	10E 11½E 11½ E	3-6, 9-11, 13-15, 24, 25, 36 11, 31, 32 4-6, 8, 9, 16, 17, 20-22, 27	9,350	600 - 800	1,500 - 2,000	2,100 -2,800
Whiteline Reservoir	37S 38S	9 E 10 E	3, 13, 14, 24 6,7	762	400 - 500	150 - 200	550 - 700
Totals				17,576	1700 - 2,100	3,150 - 4,200	5,150 - 6,300
Note: All acreages approximate							

The proposed forest treatments would include both commercial and noncommercial treatments. The commercial treatments would include two to four timber sales focusing on improving forest health and wildlife habitat and reducing fuel loads. The noncommercial treatments would include prescribed fire, mechanical and manual fuel reduction, juniper cutting and/or removal, and rehabilitation of some meadow and shrub areas.

The purpose of this EA is to provide the public with information about these forest and rangeland treatment proposals and assist the decision maker in determining if an environmental impact statement is needed.

Purpose and Need For Action

Many of the forested stands in the Bly Mountain and Whiteline areas are stringers of ponderosa pine generally described as multi-aged, multiple canopy stands. Many of the stands proposed for treatment have a dense stagnant understory component. Small pockets of bark beetle mortality are evident throughout the ponderosa pine stands. In some areas, juniper is encroaching and competing with the pine. Juniper and small conifers are also encroaching on meadow and shrub plant communities. Higher elevation areas, primarily the Swan Lake Rim area, have other tree species including white fir, Douglas-fir, incense cedar, and sugar pine. In some of the higher elevation areas, understory white fir is increasing and competing with the pines.

A decline in forest and rangeland health is occurring as a result of:

- overstocking of trees in forested areas

- juniper and white fir encroachment
- past fire suppression

The proposed treatments would focus on improving forest and rangeland health, improving habitat for native plant and animal species, and reducing the general fire hazard particularly in the Rural Interface Area. The proposed treatments would also provide forest products to help support local and regional economies. The proposed treatments would contribute to the annual timber harvest goals stated in the KFRA Record of Decision and RMP signed June 2, 1995.

In addition, one of the Management Actions/Directions in the KFRA RMP is to “reduce natural fuel hazards on BLM-administered lands in rural interface areas.” The rural interface in the Bly Mountain area encompasses approximately 2,000 acres. The proposed treatments would reduce the fire hazards in the rural interface areas.

Conformance With Existing Plans

The proposed treatments and projects are being planned under the direction of:

- Klamath Falls Resource Area Management Plan/Record of Decision (June, 2 1995)
- Klamath Falls Resource Area Fire Management EA #OR-014-94-09 (June 10, 1994)
- Klamath Falls Resource Area Integrated Weed Control Plan (EA July 21, 1993)
- Range Reform FEIS (August 1995)
- Standards For Rangeland Health And Guidelines For Livestock Management For Public Lands Administered By The Bureau Of Land Management In The State Of Oregon And Washington (August 12, 1997)
- Final Environmental Impact Statement, Vegetation Treatment On BLM Lands In Thirteen Western States(1991)
- Interior Columbia Basin Ecosystem Management Project/Eastside Draft Environmental Impact Statement (ICBEMP)May 1997.

A comparison of the proposed treatments with the direction of the preferred alternative in the draft EIS for ICBEMP indicates that the proposed action meets the intent and general direction of that alternative. The final decision for ICBEMP could amend direction in this EA, except where NFP standards and guides differ, in which case the NFP guidance would take precedence.

Chapter Two: Alternatives Including The Proposed Action

Alternative Dropped from Further Analysis - Prescribed Fire Treatment Only

An alternative to treat between 500 and 2,000 acres using only prescribed fire was considered in preliminary planning stages, but dropped from full analysis. This alternative would not produce forest products, and therefore is inconsistent with applicable land-use plans and decisions. In addition, some areas would be difficult to treat with prescribed fire alone due to high fuel levels and the potential for extreme fire behavior and effects. In other areas, where juniper encroachment is occurring, prescribed fire alone would not achieve management goals of reducing juniper stocking and encroachment.

Description of Alternatives

Three action alternatives were developed and analyzed to address the need for management in the proposed treatment areas. Alternative A (Proposed Action) proposes a combination of treatments including timber harvest, juniper cutting/removal, meadow restoration, and manual/mechanical fuel treatment. Alternative B proposes treatments similar to Alternative A, but does not treat the Swan Lake Rim area. Alternative C proposes harvest of salvage (dead and dying trees) only in all three areas. Alternatives B and C would include juniper cutting/removal, meadow restoration, and manual/mechanical fuels treatments. These alternatives and management activities, as well as the No Action Alternative, are described in more detail below.

Alternative A (Proposed Action) - Combination of Treatments (Selective Harvest, Density Management, and Juniper Management)

Summary of Alternative A: Proposed Action - Combination of treatments including:

- Two to four timber sales where the primary prescription would be density management to maintain existing uneven-aged stand structure and improve stand health
- Cutting and/or removal of juniper
- Meadow and rangeland restoration
- Manual and mechanical treatment of fuels and submerchantable material in the rural interface

This alternative would treat up to 6,300 acres of commercial forest and rangelands and provide up to 5,500 hundred cubic feet (CCF) or approximately 3.0 million board feet (MMBF) in forest products (see Table 1). Treatments would occur on both Matrix and Non-Matrix land allocations. Within designated riparian reserves, forest health treatments (thinning), prescribed burning, and juniper removal or slashing would occur only after approval of such treatments by district hydrologist and fisheries biologist. Such treatment would occur only to contribute to Aquatic Conservation Strategies as determined by the KFRA Riparian Team. Treatment within the riparian reserves would occur, contingent upon approval of the KFRA ID Team and the KFRA Riparian Team that such treatment would contribute to Aquatic Conservation Strategies. Appendix D of this EA is the prescription for treatment of forested areas and juniper woodlands within riparian reserves. This prescription would guide management activities within riparian

reserves located adjacent to intermittent streams, wet meadows, ponds, and reservoirs within the proposed project areas. Such activities would be conducted only to enhance or maintain Aquatic Conservation Strategies.

If Alternative A is selected, the next stand-wide vegetative treatment (excluding prescribed fire) in this area would occur in 15 to 20 years.

Vegetation Treatments

Alternative A would include the following vegetation treatments within the matrix and non-matrix land allocations:

- Commercial thinning and selective harvest of conifer tree species. This type of harvest would be designed to maintain existing uneven-aged, multi-strata stand structure and to reduce competition and stress to reserve trees. Reserve trees are those remaining after harvest is completed.
- Harvest of selected overstory trees that are either in fair to poor condition or need to be removed for density management purposes and/or to enhance the health of the stand.
- Removal of juniper trees that are competing with more desirable tree species. Juniper trees would be removed within a two crown width radius around more desirable tree species (primarily ponderosa pine).
- Removal of juniper in selected areas where junipers are encroaching upon pine forest areas, rangelands, and meadows.
- Manual and mechanical treatment of fuels and submerchantable material in rural interface areas. Manual treatments would include hand felling, thinning, slashing, and piling of dense stands of trees and slash that could carry crown fires to adjacent private lands. Mechanical treatments would include a combination of cutting (with a shearer), yarding, crushing, and piling of areas with excessive fuels.

Roads

Up to one mile of new permanent road and additional temporary spur roads would be constructed under this alternative. All roads in the analysis areas would be evaluated on a case by case basis to determine the best and least impacting measures for repair, replacement, or obliteration. Options include obliteration, blocking, revegetation, reconstruction, and/or maintenance. As each treatment or timber sale is designed within the analysis area, roads in the treatment area would be identified for retention or closure. BLM roads that provide access to private lands and residences would not be identified for closure. Roads not needed for the permanent transportation system would be blocked and either planted with native plant species or allowed to naturally revegetate. Existing landings and roads within riparian reserves would be used only if replacing them with landings and roads outside the riparian reserves would result in greater overall disturbance to the riparian reserve or water quality. The overall goal would be to reduce road densities in the analysis area.

Silvicultural Activities

Stand openings resulting from timber mortality would be planted with ponderosa pine, incense cedar, and Douglas-fir. An exception would be *annosus* root disease areas, where bitterbrush and other shrub species would be planted (for more information on *annosus* root disease see pages 15 of this EA).

Alternative B - Treat Bly Mountain and Whiteline Reservoir Areas (Defer Treatment of Swan Lake Rim Area)

Alternative B would be the same as Alternative A except lands on Swan Lake Rim would be deferred from harvest at this time. Alternative B proposes to harvest approximately 4,000 acres and provide up to 5,000 CCF (approximately 2.5 MMBF) in forest products from the Bly Mountain and Whiteline Reservoir areas. Two to three timber sales would be conducted under this alternative.

Harvest activities in the Swan Lake Rim area would be deferred because access problems and other logging constraints caused by steep terrain could make parts of the area uneconomical to log.

Manual and mechanical fuel and juniper treatments and meadow rehabilitation projects would be the same as described for Alternative A.

Road construction would be the same as described for Alternative A.

Alternative C - Harvest Salvage Only

Alternative C would treat approximately 2,500 acres over the three proposed project areas and provide up to 3,000 CCF (approximately 2.0 MMBF) of forest products. This alternative would harvest only dead and dying trees within matrix lands. Trees would be harvested only to salvage timber mortality or to reduce fire hazard. No harvest of salvage trees would occur in riparian reserves.

Manual and mechanical fuel and juniper treatments and meadow rehabilitation projects would be the same as described for Alternative A.

Road construction would be the same or less than described for Alternative A and B.

Alternative C would differ from Alternative A and B as follows:

- No general thinning of dense understories would occur.

- Harvest acres and volumes would be substantially less than Alternatives A and B.
- No green trees would be harvested.

Under Alternative C, the next stand-wide vegetative treatment would be needed within five years after this harvest because tree mortality is expected to continue due to the remaining dense stands.

Alternative D - No Action

Under the No Action Alternative:

- No commercial timber harvest would occur.
- Noncommercial forest and rangeland health treatments, as proposed under the action alternatives of this EA, would not be implemented.
- Prescribed fire would be conducted per the random selection method described and analyzed in the Fire Management EA#OR014-94-9.

Management Actions Common to All Alternatives Including No Action

- In accordance with EA (No. OR014-94-9), prescribed fire will be randomly introduced to all BLM-administered lands within the Klamath Falls Resource Area. Therefore, prescribed fire could be introduced in the proposed project areas under any alternative selected.
- Other activities, including livestock grazing and noxious weed control, will continue as authorized under the approved NEPA documents listed on page 5 of this EA.

Management Actions Common to Alternatives A, B, and C

- In the matrix (land use allocation identified in the RMP), a minimum of 5 to 10 large green trees per acre would be retained to meet the standards and guidelines in the Klamath Falls Resource Management Plan.
- Tractor logging, with the option of utilizing a mechanical harvester, would be the logging system on most of the harvest/treatment areas, including juniper treatment areas.
- Up to one mile of new permanent road construction would occur under these alternatives. In addition, temporary spur roads would be constructed to access units. New roads would be constructed to allow timber to be yarded to landings outside riparian reserves, to replace roads being closed in riparian reserves, and to access treatment areas. All new spur roads would be either gated or blocked after treatment. Some existing roads and spur roads that are causing resource damage or that are determined to be excess would also be obliterated or blocked. Excess roads that currently have vegetation and litter coverings would be allowed to heal naturally, particularly where obliteration would cause more resource damage.
- If available, a minimum of 1.4 snags or cull trees (minimum 14 inch DBH) per acre would be reserved for wildlife and future down woody debris. If available, 50 linear feet per acre of down logs, greater than or equal to 12 inches in diameter and 8 feet long, would be reserved.

Resource Buffers

Per RMP standards and guidelines for riparian reserves, buffers would be identified along all seasonally flowing intermittent streams. No perennial streams exist in the proposed project areas. Riparian reserve buffers would also be identified around ponds, reservoirs, and wetlands. The width of the riparian reserves adjacent to drainages would be based upon the height of one site potential tree. The buffer widths listed in Table 2 below would apply to resource buffers identified in the analysis area.

Table 2. Buffer Widths To Be Applied in Proposed Projects

Resource	Buffer Width
Constructed ponds, reservoirs, and wetlands greater than one acre in size	150 feet
Wetlands less than one acre in size	The wetland, to the outer edge of riparian vegetation
Lakes and natural ponds	300 feet
Intermittent streams	120 feet each side of stream
Perennial nonfish-bearing streams	None in analysis area
Perennial fish-bearing streams	None in analysis area
Wet Meadows	150 feet
Seasonal wetlands	150 feet
Cliff/talus slopes	100 feet
Dry meadows	100 feet
Wooded swamps	150 feet

Special Status Species

Additional measures would be taken to protect threatened, endangered, and special status species. Those measures are listed below.

- Bald eagle, golden eagle, and goshawk nesting territories would be protected by buffers and seasonal restrictions, where needed.
- If treatment areas are proposed in or near eagle or goshawk territories, special marking guidelines would be developed to protect the territories and maintain habitat.
- Alternatives A, B, and C, would maintain eagle and goshawk habitat by thinning around large trees used for roosting and nesting.

Prescribed Fire

Prescribed fire would be used within three years of completion of harvest to treat fuels associated with timber harvest and juniper treatment activities, to reduce fuel loads, and to improve plant and wildlife diversity. No ignition would occur within a riparian reserve. Fire would be allowed to “back” into riparian reserves.

In addition, some of the proposed treatment units may be randomly selected for introduction of prescribed fire after harvest activities are completed, as described and analyzed in EA#014-94-9.

Root Disease Areas

Within root disease infection centers (see page 15), and in a strip 50 feet around those areas, susceptible tree species (primarily ponderosa pine) would be removed, and bitterbrush and other shrub species would be planted.

Noncommercial Treatments - Up to 4,200 Acres

Noncommercial treatment combinations in the juniper woodland, ponderosa pine/juniper woodland transition zones, and historic meadows would consist of:

- Manual or Mechanical cutting only - material is left on site and piled for burning.
- Manual or Mechanical cutting and yarding to a designated area to be sold for firewood, posts, poles, or milling.
- Girdling.
- Manual or Mechanical cutting followed by prescribed fire.

Noncommercial treatment combinations on forested land would consist of:

- Precommercial thinning of younger stands less than seven inches in diameter followed by hand piling and burning of slash.
- Manual or Mechanical piling of areas adjacent to private lands that contain excessive large down fuels and snags as a result of past insect or disease related mortality.
- Using mechanized equipment to break up fuels adjacent to private lands. Equipment may include mechanical slash busters or mobile chippers.

Meadow Restoration Areas

Prescribed fire, mechanical and/or manual brush and juniper treatments, planting of desired species, or a combination of these methods would be used to maintain or rehabilitate meadows. Past fire suppression has allowed pine, juniper, and brush encroachment into meadow areas, which has reduced their size and quality. Meadow areas identified for rehabilitation would have the encroaching vegetation removed through the methods described above. These areas would be planted with desirable species (bitterbrush, mountain mahogany, sage, and aspen) or allowed to regenerate shrubs, grass, and forb species naturally. Other areas may be treated with fire alone to reduce juniper and decadent shrub encroachment and to return the meadows to early seral stages.

Best Management Practices

Best Management Practices, based on management prescriptions dictated in the Klamath Falls Resource Management Plan Record of Decision, are common to all alternatives except No Action. These management actions and Best Management Practices are summarized in Appendix D of the Resource Management Plan (RMP).

Project Design Features

Appendix A-1 and A-2 (attached to this environmental assessment) describe Project Design Features (PDFs) developed to minimize or reduce adverse impacts. These PDFs are common to all alternatives except No Action.

Monitoring Activities

The proposed treatments would be monitored as described in the Klamath Falls Resource Area Resource Management Plan/Environmental Impact Statement (June 1995).

Chapter Three: Affected Environment

Introduction

This chapter summarizes the physical, biological, and socioeconomic characteristics of the project areas. These characteristics are discussed thoroughly in the Klamath Falls Resource Area Proposed Resource Management Plan/Final Environmental Impact Statement (FEIS), pages 3-3 to 3-79. Therefore, the discussion here will be brief with page references to the FEIS.

The proposed project areas are located east of Klamath Falls in Klamath County, Oregon (see location maps in Appendix B) within the Klamath Falls Resource Area. Land ownership adjacent to the proposed project areas includes National Forest, U.S. Timberlands, Jeld-Wen, and other private ownerships. Adjacent private lands are also used extensively for residences, particularly in the Bly Mountain area. Uses of these lands include industrial and private timber harvest, public and private livestock grazing, farming, and recreational activities including hiking, camping, hunting, fishing, snowmobiling, wood cutting, and wildlife viewing.

Water Resources

Several intermittent streams/drainages, livestock ponds, springs, and small irrigation reservoirs are located in or near areas proposed for treatment. No perennial streams exist within the proposed project areas. In all three Proposed Project Areas, the streams and drainages drain from upland areas (where the proposed project areas are located) to the flat agricultural lands surrounding them where they empty into closed basins or irrigation and drainage ditches and canals. Some of the basins, ditches, and canals eventually are pumped or drain into the Lost River.

Whiteline Reservoir and Swan Lake Rim

The drainages on Swan Lake Rim and in the Whiteline Reservoir area all empty into Swan Lake, Alkali Lake, or one of the other closed basins in the area. The closed basins hold the water or it is pumped into drainage canals that flow into the Lost River. The Proposed Project Areas on Swan Lake Rim and in the Whiteline Reservoir are more than six miles from the Lost River at their closest point.

Bly Mountain

The drainages on the northern and western portions of the Bly Mountain Proposed Project Area drain into Ritter Reservoir and then into a series of irrigation and drainage canals and ditches that empty into the closed basins in the vicinity of Alkali Lake. Some of the drainage canals continue to the Lost River. One main drainage on the eastern portion of the Bly Mountain Proposed Project Area flows through Bechdolt Flat and into irrigation and drainage canals east of Bonanza, Oregon. The canals and ditches eventually empty into the Lost River. The Proposed Project Area on Bly Mountain is more than four miles from the Lost River at its closest point.

In 1988, the Oregon Department of Environmental Quality (DEQ) conducted an extensive inventory of water quality problems in the state (1988 Oregon Statewide Assessment of Nonpoint Sources of Water Pollution). Pollution types are classified according to source of information (substantiated with data or reported observations), and pollution problems are rated as being

severe or moderate. Lost River was identified in the assessment as having severe pollution problems, substantiated with data, specifically in regards to turbidity, low dissolved oxygen, nutrients, pesticides, bacteria/viruses, sedimentation, stream bank erosion, decreased stream flow, insufficient stream structure, and excessive plant growth. Moderate observed problems with dissolved gases were also reported.

The Lost River has been designated by the DEQ as “water quality limited” under Section 303(d)(3) of the Clean Water Act. The DEQ has identified the need for further study to verify water quality problems and sources in the Lost River Basin.

More detailed information regarding riparian areas can be found in the Klamath Falls RMP (pages 3-31 to 3-37 and Appendix P).

Soils

At least 20 different soil series exist in the proposed project areas. The soils represent a wide range of erosion potentials from slight to high. Many of the soils that have low to moderate erosion potentials on flat ground become much more prone to erosion as the slopes get steeper. Most steeper slopes within the proposed project areas have not been identified for treatment. Compaction potential varies with soil type, soil moisture, and type of equipment used. In general, because of the affected environment’s mild topography and low number of streams, soil erosion is less of a concern than other types of soil disturbance.

Major soil series within the proposed treatment/project areas are listed in Appendix C. More detailed soils information can be found in the RMP (page 3-10) and in the Soil Survey of Klamath County, Oregon, Southern Part (SCS 1985).

Roads

Most existing roads in the proposed treatment/project areas were constructed to access timber lands, except for the Bly Mountain Area, where most of the roads were constructed to access timber lands and subdivisions.

Roads, particularly unmaintained dirt roads, are the major contributor to erosion and sedimentation within the proposed project areas. When roads are not maintained, the culverts and ditches can become clogged and wash out. Roads crossing or adjacent to riparian areas can route water and sediment into drainages within the Proposed Project Areas.

Some BLM roads in the proposed project areas are used for access to private property and recreational activities. Other unmaintained roads are used by local Off-Highway-Vehicle enthusiasts for recreational purposes. Some unsurfaced roads that access BLM lands are being used as unauthorized dump sites for household garbage, tires, and dead animals.

Bly Mountain

According to available eastside road inventories, the road density on BLM lands in the Bly Mountain proposed project area is approximately 1.34 miles per square mile. The actual density is probably higher since some unimproved and unmaintained roads are present that have never

been inventoried. Most of the roads on BLM lands in the Bly Mountain area are used for recreational and private land access. The surfaced roads that pass through BLM lands to adjacent lands are maintained by local road associations in the Klamath Falls Forest Estates subdivisions. Some of the older, unsurfaced roads are used for off-highway recreation activities. Many of these roads are rough, unmaintained, and have not been surveyed.

Swan Lake Rim

The road density on BLM lands in the Swan Lake Rim area is approximately 0.52 miles per square mile. The actual density is probably higher since some unimproved and unmaintained roads are present that have never been inventoried. The roads were built to access timber and are not currently maintained. All of the roads in this area are dirt roads. Klamath County maintains a gravel pit and access road on the south end of Swan Lake Rim. No public access for motorized vehicles is available for BLM lands in the Swan Lake Rim area. Non-motorized access is available on the south end of Swan Lake Rim from Highway 140 approximately 1 mile east of Dairy, Oregon.

Whiteline Reservoir

The road density on BLM lands in the Whiteline Reservoir Proposed Project Area is approximately 1.51 miles per square mile. The actual density is probably higher since some unimproved and unmaintained roads are present that have never been inventoried. The roads are mostly dirt roads, originally built to access timber. Some surfaced (gravel) roads are present and are maintained by adjacent private timber companies. Limited public access for motorized vehicles is available in this area. Most of the roads are controlled by adjacent private timber companies.

Vegetation

Forest Areas

Forests occurring in the proposed treatment areas can be generally described as stringers of ponderosa pine growing in multi-aged, multiple canopy stands, many of which have encroaching juniper and a dense understory component of ponderosa pine. White fir is a common understory component at higher elevations. There are some stands where most of the larger overstory trees have been harvested and the residual stands consist primarily of small, pole size timber. The stands contain the following tree species: ponderosa pine, incense cedar, white fir, Douglas-fir, sugar pine, aspen, and western juniper. Ponderosa pine is the main commercial tree species. Through decades of fire suppression, juniper has become the dominant tree species over most of the proposed project areas.

Vegetation within the treatment areas has been modified by past management practices including logging, grazing, and exclusion of fire, resulting in high fuel loads and structural changes in the forest that increase the likelihood of stand replacement fires. Existing overcrowded stand conditions and competition for limited moisture with encroaching juniper reduces overall forest health in the pine stands. Crowded growing conditions stress the trees and make them more vulnerable to insects and disease.

Bark beetles, including mountain pine bark beetles, that can infest and kill pine trees, are present in the forested stands of the proposed project areas. Small (less than one acre) patches of

ponderosa pine have been killed and are currently being attacked by bark beetles. No large areas of infestation have been identified at this time.

Root Diseases

There are some *Heterobasidion annosum* (Annosus Root Disease) infection centers in the proposed project areas. There are at least two known forms of naturally occurring annosus root disease that can infect conifers. Susceptible conifers include ponderosa pine, Douglas-fir, white fir, incense cedar, and western juniper. Ponderosa pine is the primary host in the proposed project areas. One form of the disease infects and weakens or kills pines. Bark beetles often infest the root disease weakened pine trees and hasten their death.

Incense cedar, juniper, true firs, and Douglas-firs are somewhat resistant. This pathogen usually does not kill the host cedar, juniper, true fir, and Douglas-fir trees directly, but does affect their growth and health making them more susceptible to insect attack and windthrow. Root disease centers expand slowly, approximately one foot per year.

Juniper Woodlands and Meadows

The majority of the project area is juniper woodland (See Table 1) and contains many shrub-steppe communities adjacent to or intermingled with the forested stands. Through decades of fire suppression, the shrub communities have become older and decadent. Juniper and small pines have invaded many meadow areas, reducing the size and quality of meadow and shrub areas in the proposed project area. These meadows and shrublands are important for wildlife including big game and neotropical migrants.

Vegetation plant groupings are discussed in the RMP under the Conifer Group on page 3-27.

Noxious Weeds

Botanical inventories were conducted in the three proposed project areas in 1994. Results of those inventories are discussed below by individual project area and legal description.

Whiteline Reservoir (1994 survey results)

A single population of Dalmatian toadflax (*Linaria dalmatica*) was located within T. 37 S., R. 9 E., Section 24. An inventory of project areas within T. 38 S., R. 10 E. found no noxious weed populations.

Swan Lake Area

The 1994 inventory in project areas within T. 37 S., R.10 E., Sections 12 and 13, and T. 37 S., R.11½ E., Sections 20-22 and 27-29 found no noxious weed populations.

Inventories conducted in 1998 within T. 31 S., R. 10 E., Sections 24 and 25; T. 37 S., R. 11½ E., Sections 31 and 32; and T. 38 S., R. 11½ E. found 10 populations of noxious weeds. Those populations included Dalmatian toadflax (*Linaria dalmatica*), Canada thistle (*Cirsium arvense*) and musk thistle (*Carduus nutans*).

Project areas within T. 37 S., R. 10 E., Sections 3-6, 9-11, and 13-15 have not been systematically surveyed for botanical resources.

Bly Mountain

Only one known noxious weed site exists within the proposed Bly Mountain timber harvest area. The 1994 inventory located a single population of Dalmatian toadflax (*Linaria dalmatica*) within T. 38 S., R. 11 E., Section 13.

The BLM, in concert with the Oregon Department of Agriculture, is working to reduce noxious weed populations. When noxious weeds are located, integrated pest management methods are being used to control their populations. Treatment methods include chemical, mechanical, manual, and biological or a combination of these methods. More information on noxious weeds and management strategies can be found in the RMP (pages 73 and 74).

Wildlife and Fisheries

Terrestrial Animals

Common wildlife species found in this area include mule deer, elk, coyotes, black bear, mountain lions, bobcats, eagles, hawks, owls, turkeys and grouse. A more detailed description of wildlife habitats can be found in the KFRA FEIS Volume I, pages 3-37 to 3-47.

The proposed project areas are located in critical big game winter range, particularly the southern part of Swan Lake Rim and Bly Mountain.

Aquatic Animals

Common fish species occurring in permanent water impoundments in the proposed project area include introduced warm water species such as largemouth bass, sunfish, bullheads, yellow perch, crappie, and various minnow species. The downstream areas of Lost River support a wide variety of introduced and native species including: redband trout, sucker species, speckled dace, bass, brown bullhead, perch, crappie, sunfish, and various minnow species. Lost River and shortnose suckers spawn in Lost River.

Special Status Species

Special Status Animals

Threatened and Endangered Species: Bald eagles, which are Federally listed as Threatened, are known to occupy nesting and roosting sites in and around the proposed project areas. Annual aerial flight surveys are conducted to determine the nesting status of local bald eagles.

Shortnose and Lost river suckers, both Federally listed as Endangered, inhabit bodies of water downstream from the proposed project areas, including the Lost River. Lost River is more than four miles from the proposed project area at its nearest point.

Other Special Status Species: The northern goshawk is a Bureau Sensitive Species that occurs in the proposed project areas. Two years of goshawk surveys have been conducted in the proposed project areas according to the BLM protocol standards. No nesting territories have been located.

One golden eagle nesting territory exists in the proposed project area. Golden eagles are Oregon State Sensitive Species.

Special Status Plants

Identification of special status plant species for this EA is based largely on botanical inventories conducted in 1994 and 1998. No federal listed or proposed threatened or endangered plant species are known to occur in the three project areas. However, as described below, some special status species do occur within proposed project areas.

Bly Mountain

The 1994 inventory located 11 mapped populations of fringed campion (*Silene nuda* spp. *insectivora*, a Bureau tracking species), and four mapped populations of long-bearded mariposa lily (*Calochortus longebarbatus* var. *longebarbatus*, a Bureau sensitive species) within the area proposed for timber harvesting (see map Appendix B-1). The fringed campion populations are associated with deeper soil with little or no slope and ephemeral water within T. 37 S., R.11 E., Sec. 34, and T. 38 S., R.11 E., Sections 10, 11, 13, 14, 22, 23, and 29. Long-bearded mariposa lily populations are associated with wet meadows containing an ephemeral creek and with a small ephemeral wet forest opening within T. 37 S., R. 11 E., Sections 26, 27 and 35.

Swan Lake Area

The 1994 inventory of project areas within T. 37 S., R. 10 E., Sections 12 and 13, and T. 37 S., R.11½ E., Sections 20-22, and 27-29 found no populations of special status plant species. Inventories of botanical resources in 1998 of project areas within T. 31 S., R. 10 E., Sections 24 and 25; T. 37 S., R.11½ E., Sections 31 and 32; and T. 38 S., R. 11½ E. found no populations of special status plant species. Project areas within T. 37 S., R. 10 E., Sections 3-6, 9-11, and 13-15 have not been systematically surveyed for botanical resources.

Whiteline Reservoir

The 1994 botanical inventory of project areas within T. 37 S., R. 9 E. located one population of fringed campion (*Silene nuda* spp. *insectivora*, a Bureau tracking species) in Section 3 (see map Appendix B-2). An inventory of botanical resources of project areas within T. 38 S., R. 10 E. found no populations of special status plant species.

Livestock Gazing

Cattle grazing is currently permitted throughout the proposed timber harvest areas (see table 3).

Table 3. Grazing Allotments in Bly Mountain, Swan Lake, and Whiteline Areas.

Allotment Number	Season of Use	AUMS
Bly Mountain		
Cheyne (0811)	5/1 to 6/15	51*
Kellison (0834)	5/1 to 6/15	19
McCartie (0860)	5/1 to 5/31	83*
Yainax Butte (0861)	6/1 to 9/15	120
Klamath Forest (0862)	5/1 to 5/31	47*
Swan Lake Area		

Drew (0817)	5/1 to 6/30	72*
Jesperperson (0832)	5/1 to 7/1	158
Swan Lake (0858)	5/1 to 6/30	300
Whiteline and Vicinity		
Two Mile (0806)	5/1 to 9/30	80
Wirth (0863)	4/15 to 10/15	113
* These allotments have been in approved non-use in recent years, although they could be re-activated for grazing use at any time.		

Additional information on the above allotments is in the Klamath Falls Resource Area Record of Decision and Resource Management Plan and Rangeland Program Summary (Appendix H) dated June 1995.

Cultural Resources

The boundary of the former Klamath Indian Reservation lies at the northern boundary of the proposed project area. The Klamath Tribes were again recognized by the federal government in 1986 with the Klamath Restoration Act. The Consent Decree, signed in 1981, reaffirmed Klamath “treaty rights” to hunt, trap, and fish within the former reservation lands as in place in 1954. These lands lie just to the north of the current analysis area, which is delimited in places by the former southern boundary of the reservation. Though currently having no federally recognized “treaty rights” on BLM lands within the analysis area, the Klamath Tribes remain concerned that land use decisions made by the BLM may have potential to impact archaeological sites, landscapes of cultural significance, and wildlife habitats. Efforts are made to keep the Klamath Tribes informed about potential BLM actions and associated impacts.

A general description of prehistoric and historic cultural resources located within the proposed project area is given in the Klamath Falls Resource Area Resource Management Plan and Environmental Impact Statement, Volume 1 (pages 3-48 to 3-50). More detailed information is presented within “Prehistory and History of the Jackson-Klamath Planning Unit: A Cultural Resources Overview” (Follansbee 1978).

Roughly half of the analysis area has been covered by relatively recent archaeological surveys associated with the proposed Bly Mountain Land Exchange, various proposed prescribed fire activities, and the proposed Kennedy land sale. Prehistoric and historic resources have been encountered during these surveys. Prehistoric sites typically consist of lithic scatters with varying complexity and intensity. Constructed rock features, or cairns, were also encountered during survey. The historic resource is generally represented by the ubiquitous “can dump.” Where vehicle access continues across BLM-administered lands, debris of historic and more recent origins often litters the roadside.

Following is a summary of the survey activity and cultural sites discovered to date within the overall area encompassed by this environmental assessment.

Bly Mountain Subarea: This area was surveyed by Washington State University in the fall of 1993. Findings were presented in a report entitled *Archaeological Survey of BLM Lands in the Vicinity of Alkali Valley, Klamath County, Oregon* (Samuels et al. 1994). Approximately 5,800 acres were surveyed within the current area of concern. Twenty prehistoric sites were encountered and recorded. Only one historic site was recorded. Also encountered were a number of isolates, which generally consisted of utilized obsidian flakes and tools. Another survey of approximately 80 acres was conducted by BLM staff (Ross 1999). No additional cultural sites were located.

Swan Lake Rim Subarea: Approximately 930 acres within the southern portion of the Swan Lake Rim area (north of Dairy) were surveyed during the summer of 1998 as reported in *Swan Lake Rim Cultural Resource Survey, Klamath County, Oregon* (Jones 1998). This survey was associated with proposed juniper woodland management and prescribed fire activity. Three lithic scatters of moderate extent and intensity and eight isolated finds were recorded. Some small linear surveys were also conducted by BLM staff in 1998 while evaluating prescribed fire impacts in the general area. No sites were recorded.

Whiteline Subarea: This area consists of approximately 760 acres, all of which have been surveyed. Two different surveys conducted by Washington State University (Huber 1994 and Samuels et al. 1994) covered portions of this sub-area, in addition to a survey conducted by BLM staff in 1998 (Ross and Kritzer 1998). During these surveys, eight prehistoric sites and one historic site were recorded.

Recreation/Visual Resources

Recreational use of the proposed treatment/project area generally consists of uses such as camping, hiking, hunting, fishing, snowmobiling, woodcutting, and wildlife viewing. No developed recreation sites are located within the project area.

The Swan Lake Rim area is managed for non-motorized use (no new permanent motorized vehicle accessible roads or trails are to be constructed in the rim area). There is no public access for motorized vehicles in the Swan Lake Rim area. The BLM is pursuing legal public access to construct a non-motorized trail along Swan Lake Rim.

Visual Resource Management (VRM) classes and management recommendations for BLM lands in the KFRA are identified in the RMP on pages 43 and 44. A map of VRM classes in the KFRA is available in the RMP Map Packet (Map 2-5). The VRM classes existing in the proposed project areas are listed in Table 4 below.

Table 4. Visual Resource Management Classes in Proposed Project Areas.	
Area	VRM Class
Bly Mountain	VRM II VRMIII VRMIV
Swan Lake Rim	VRM III VRM IV
Whiteline Reservoir	VRM IV

Management implications for VRM classes present in the proposed project area are listed below.

- VRM II Retain existing character of landscapes. Management activities would not attract the attention of the casual observer.
- VRM III Partially retain the existing character of landscapes. Management activities may attract attention but should not dominate the view of the casual observer.
- VRM IV Management activities may dominate the view and be the major focus of viewer attention.

Rural Interface Areas

Rural Interface Areas are lands where generally small private ownerships are located adjacent to lands administered by public agencies including the BLM. Rural Interfaces exist in The Bly Mountain and Swan Lake Rim Proposed Project areas. The Bly Mountain area includes the Klamath Falls Forest Estates Subdivisions, which are divided into many small (1 to 5 acre) private lots. Some of the lots have been developed and include buildings and residences.

In some areas, the BLM lands adjacent to the private ownerships have fuel concentrations that contribute to high fire hazards. Such fuels on BLM lands include thick brush, dense stands of continuous trees, patches of dead and dying trees, and accumulations of slash (down trees and old logging debris).

Ownership boundaries between public and private lands are identified by posted and blazed trees, survey monuments (brass caps), re-bar pins (lot corners), fences, and other monuments. Many of the fences located between public and private lands are not located on the true property lines. The fences tend to stray across ownerships and are not reliable as property lines.

In the past, some of the private lots adjacent to BLM lands have been logged, and in the process, trees have been cut on BLM lands. At least four timber trespasses have been identified on BLM lands in the Bly Mountain Area. Investigations of those trespasses are ongoing. The forested stands in the trespass areas are not representative of BLM harvesting practices.

Past Land Exchange Proposal

Approximately five years ago an exchange of lands between the BLM and private parties was proposed for portions of the lands located in all three of the proposed project areas. At that time, public comments regarding exchange of the Bly Mountain lands identified in this exchange were mostly against the exchange. Scattered parcels of land near Whiteline Reservoir and east of Swan Lake Rim were eventually sold to private parties. The Bly Mountain lands were retained by the BLM.

Social/Economics

The proposed project areas are located between 7 and 18 miles north and east of Klamath Falls, Oregon. Klamath Falls is a community of approximately 40,000 people. The main industries in the local area are agricultural, ranching, tourism, and forest products (not necessarily in order of importance).

Currently, there are three to five forest products based mills and several smaller forest products based companies operating in the Klamath Falls area. In the recent past, up to ten forest products mills have been active in the area. The local forest products industries rely on both government and private timber supplies. Sources of government timber include the Oregon Department of Forestry, The U.S. Forest Service, and the BLM.

Chapter Four: Environmental Consequences

This section summarizes environmental consequences of implementing the alternatives described in Chapter 2. All impacts expected from the proposed forest and rangeland treatments have been described and analyzed in the FEIS and are approved in the Resource Management Plan. More detailed information regarding specific environmental consequences and the cumulative effects within the Klamath Falls Resource Area from these types of treatments/projects can be found on pages 4-1 through 4-143 in the FEIS.

The following resources are either not present, or would not be impacted, by any of the alternatives: prime and unique farmlands, mining claims, paleontological resources, wilderness, research natural areas, special areas (Areas of Critical Environmental Concern), wild and scenic rivers, Native American religious sites, or wild horses/burros. There are no known hazardous materials located on the proposed project areas.

Environmental Justice:

For all alternatives, no direct or indirect disproportionately high or adverse human health or environmental effects to minority or low income populations are expected to result from implementation of the proposed forest health treatments, including timber harvest, prescribed burning, and other actions described in this environmental assessment.

Impacts From All Timber Sales and Proposed Projects

No adverse impacts beyond those described in the documents listed in the “Conformance With Existing Plans” section of this Environmental Assessment are expected for the following resources:

- Air quality (RMP, pages 4-8 to 4-9)
- Soils (RMP, pages 4-11 to 4-12)
- Vegetation, including riparian vegetation (RMP, pages 4-35 to 4-42)
- Special forest/natural products (RMP, pages 4-39,124)
- Wildlife and fisheries (RMP, pages 4-44 to 4-67)
- Cultural resources (RMP, pages 4-93 to 4-97)
- Recreational/visual resources (RMP, pages 4-97 to 4-108)

The proposed project area is included in a resource area wide environmental assessment (EA # 014-94-9) to reintroduce fire in forest stands on a random basis. This EA will not evaluate the impacts of random underburning since it has already been evaluated under EA# 014-94-9.

Site-specific resource impacts are described below.

Water Resources

Overall, there would be minimal or no impacts to the water resources under any of the proposed alternatives. Adherence to the Aquatic Conservation Strategies of the RMP, the Best Management Practices outlined in Appendix D of the RMP, and the Project Design Features

listed in Appendix A -1 and A-2 would minimize impacts to water resources areas from effects of the proposed treatments.

Because most of the proposed project area has already been affected by past management activities, and the access roads have mostly been built, the potential to adversely affect groundwater recharge and aquifer functioning would be small or negligible under all Alternatives. In addition, any new road construction would be limited to slopes less than 20 percent and no major cut and fill operations that could interrupt ground water would be involved. The removal of commercial forest trees and juniper would be expected to increase ground water recharge. However, the amount of increase would likely be small or not detectable.

The RMP describes potential impacts to water resources on pages 4-16 to 4-24 in detail. No ground-disturbing activities would take place within any riparian reserve until the proposed activities are reviewed and supported by the Klamath Falls Resource Area Interdisciplinary Team (IDT). For more information on impacts to water resources, see pages 4-17 through 4-19 in the FEIS.

Impacts from sediment are expected to be low in all alternatives due to the relatively flat topography, low erodibility of forest soils, and absence of perennial streams in the proposed project areas (see page 4-18 in the FEIS). Establishment of riparian reserve buffers and adherence to the PDFs for Water Resources (Appendix A-2) would also protect the drainages from sediments.

Up to 1 mile of new road construction, as proposed in Alternatives A, B, and C, is expected to have a low impact to water resources. Some new road construction is being proposed to close existing roads within riparian reserves. Permanently blocking roads existing in riparian reserves and allowing them to naturally revegetate would likely not impact water quality. Moving roads that are currently impacting water resources, to sites outside of riparian reserves would benefit water quality in the long run. Roads existing in riparian reserves would be left in place if resource specialists determine that closing or obliterating them and/or constructing new roads outside of the riparian reserves would cause greater resource damage.

Alternative D (No Action), which would result in no new road construction, would have no short-term water resource impacts associated with road construction or reconstruction. Roads currently located in riparian reserves and causing resource damage would continue to impact water quality in some locations. Conversely, no logging activities under Alternative D would cause no resource impacts associated with road construction, equipment travel, and yarding. No compaction, surface disturbance, or channeling would occur.

Alternatives A, B, and C could create minor water quality and quantity improvements over the long term by reducing the amount of juniper woodland over the landscape. Juniper trees, that have become the dominant tree species over the last 100 years, use significant amounts of water. Continuous juniper stands where grassland and shrub-steppe communities historically existed, have changed the water cycles in the proposed project areas. Removing some of the juniper would make more water available in the watershed. However, the acreage of proposed juniper treatments would probably not be large enough to cause detectable impacts to water resources. Removal of some of the commercial trees species proposed in the forest treatments in these alternatives would have similar effects on a smaller scale.

Closure of unneeded roads and roads causing environmental damage (as emphasized in Alternatives A, B, and C) would reduce the potential for adverse effects to water resources. This proposed action strives to reduce the road density levels to meet the 1.5 mile road per square mile target recommended in the FEIS. In some areas, particularly where roads access private property, the 1.5 mile level would not be achieved. Reducing the amount of existing roads would have a net positive effect within the watershed (see page 4-17 in the FEIS).

Soils

Alternatives A and B would have some adverse impacts to soils resources. These alternatives include the use of ground-based equipment to harvest and yard commercial trees and juniper trees. These alternatives also include the use of prescribed fire.

Ground-based equipment can impact soils in several ways. When machinery is driven over the soil, particularly if it is dragging logs, organic material can be removed or displaced disrupting nutrient cycles and water infiltration. Equipment operations can also compact soils and expose mineral soil, potentially resulting in poor water infiltration, runoff, and surface erosion on steeper slopes. Channels created by dragging logs can also contribute to erosion on steeper slopes. Equipment use can limit plant growth on severely compacted soils.

By adhering to the PDFs in Appendices A-1 and A-2, soil disturbance would be limited to landings and designated skid trails located at 150-foot intervals. Under Alternatives A, B, and C, the amount of soil surface area detrimentally impacted is expected to be 20 percent or less. Impacts would be from roads, landings, and skid trails (see page D-11 of the RMP for more information regarding soil impacts).

Past harvest activities and monitoring have shown that when mechanical harvesters are used, more than 20 percent of the soil surface can be disturbed. On those areas, implementation of mitigation measures (ripping and seeding of disturbed areas that exceed the 20% threshold) is expected to minimize the impacts to within acceptable limits.

In Alternatives A, B, and C, risk of soil compaction would be low to moderate due to using designated skid trails, operating only when soil moisture is below 20 percent, and requiring low ground pressure equipment.

Prescribed fire could have short-term impacts to soil resources if excessive organic material is consumed during the fire. Exposure of mineral soil resulting from a hot fire could lead to erosion on steeper slopes. Extremely hot fires could also create hydrophobic areas in the soil that do not allow water infiltration. Prescribed fires are generally conducted during the spring and fall when weather conditions and fuel moisture limit consumption of organic material and allow for relatively cooler controlled fires. Removal of excessive organic material and creation of hydrophobic layers would not be expected under controlled burn conditions.

Alternative C (Salvage Only) would have soil impacts similar to Alternatives A and B, but limited to a much smaller and more widely scattered area. Since this alternative would harvest only dead and dying trees, the equipment activities expected to impact soils would be limited to

localized areas of tree mortality. Prescribed fire impacts would be the same as those described for Alternatives A and B.

Alternative D (No Action) would have no impacts to soils associated with the use of logging or road building equipment. Prescribed fire, applied according to the random selection process described in the Fire Management EA, would have impacts similar to those described for Alternatives A, B, and C. Other expected impacts are listed in the Fire Management EA.

Under Alternative D, which would not treat fuel concentrations, the risk of stand-replacing wildfires and the threat to private property would remain high in some areas. These fires could be hard to control and could burn extremely hot, causing excessive consumption of organic material, leaving exposed mineral soil, and also creating hydrophobic areas as described above.

Roads

Under Alternatives A, B, and C, there would be few impacts to soils, wildlife, and water resources from road construction, maintenance, and use. This expected level of impact is contingent on adherence to PDFs in Appendices A-1 and A-2 and limiting of permanent road construction to one mile. Replacing roads that are causing resource damages (such as existing roads in riparian reserves) would reduce the amount of impact to resource values such as soils, water quality, and wildlife.

Road activities proposed under Alternatives A, B, and C (including grading, ditching, brushing, and surfacing to allow truck traffic) would improve the roads where the work is done. Closing and/or obliterating some unsurfaced roads in the proposed project areas would help to prevent wildlife harassment, erosion, and unauthorized dumping. Access to private lands would not be affected as roads accessing private lands would remain open, and in some cases would be improved. Some off-highway vehicle recreational activities could be lost where existing primitive roads are blocked, obliterated, or improved.

The requirements for use and maintenance of roads during removal of forest and rangeland products under Alternatives A, B, and C would minimize impacts to road conditions and local residents associated with increased truck traffic. Among the requirements that would reduce impacts are conducting road maintenance in accordance with BLM license agreements and local road association agreements. Such maintenance includes grading, dust abatement, and cleaning of drainage ditches and culverts. Vehicles would be limited to posted speeds.

Alternative D (No-Action) would have no impacts from road activity, due to the absence of forest and rangeland treatments. Resource damage associated with eroding roads, roads in riparian areas, roads with inadequate drainage features, and access for illegal dumping would continue. This alternative would have no impacts to current residential access.

Vegetation

Forest Areas

Alternatives A and B would provide a general thinning of the ponderosa pine stands in the proposed project areas. Thinning to an average basal area of 90 square feet would provide a

better growing environment for the residual leave trees. The residual leave trees would be more resilient against insects outbreaks. The thinning treatment would leave an unevenaged stand with a representative of all age and size classes. The majority of the harvested trees would be from the mid to lower diameter classes. The average diameter of the post harvest stands would be larger than the currently existing stands.

Under Alternatives A, B, and C, commercial forest areas would have juniper removed from a two crown width area around pine trees, providing a thinning effect similar to that described above. Residual trees would have better growing conditions with more available water, nutrients, and light. Residual trees would be more resistant to insects, disease, and fire. Trees that would benefit from juniper removal include selected high resource value trees such as eagle nesting and roosting trees. In non commercial juniper woodlands, juniper would also be removed from around pines providing similar benefits.

Alternatives A, B, and C would reduce fire hazards by removing varying amounts of fuels in the form of commercial and noncommercial trees. Breaking up the contiguous crowns, removing some of the ladders fuels, and following up treatments with a prescribed burn would reduce the fire hazards in many of the stands. The greatest reduction of fuel levels would be in Alternative A and the least would be in Alternative C.

Alternative C would provide little thinning benefit since only dead and dying trees would be salvaged. Stand conditions would remain virtually the same. In areas where stocking levels are high, mortality from competition and bark beetle attacks would be expected to continue and fuel levels would remain high in many areas.

Alternative D (No Action) would not harvest any trees or provide any thinning effects to the forest stands. Overcrowded stands would remain susceptible to insects, disease, and fire. Some thinning effects would be realized if portions of the analysis areas were selected for random underburning under the Fire Management EA.

Root Diseases

Alternatives A and B would attempt to manage and reduce existing root disease centers by removing susceptible tree species from the centers and in a strip fifty feet around the centers. The cleared areas would then be replanted with bitterbrush and other shrub species. As described in the PDFs in A-1, the surface of cut stumps would be treated with a fungicide to prevent further spread of the root diseases via spores.

Alternatives C and D would not treat root disease centers. The centers would continue to expand (about one foot per year) and kill pines and weaken other conifer species. Alternative C would include fungicide treatment of cut salvage stumps to prevent root disease spread via spores.

Alternative D (No Action) would not harvest any trees and therefore would not expose any new stump surfaces to infection by root disease spores.

Juniper Woodlands and Meadows

Meadow rehabilitation and juniper treatments proposed in Alternatives A, B, and C would include removal of encroaching junipers, submerchantible conifers, and older decadent shrubs. The meadows would be enlarged to more closely resemble their historical size. Encroaching vegetation that was historically controlled by frequent fire intervals would be removed through the use of mechanical, manual, or prescribed fire methods. Most of the currently existing juniper stands were not present 100 years ago. Other juniper woodland treatments would create new openings in these continuous juniper stands. These new openings would be replanted with bitterbrush and other shrub species or allowed to regenerate naturally.

The regeneration and enhancement of meadows and shrub-steppe communities would improve foraging habitat for big game species. Other meadow and shrub dependent species would also benefit.

Mechanical and prescribed fire treatments would have short-term impacts to shrub, grass, and forb species that are damaged by equipment or fire. Regrowth of the damaged vegetation would occur within one or two years and would likely regenerate to higher stocking levels.

Cheat grass, a frequently present weed species, could invade areas where prescribed fire is used.

Under Alternative D (No Action), which would not treat any of the meadows or juniper stands, meadow conditions would continue to decline as juniper and brush continue to increase. Juniper woodlands would lose shrub and herbaceous plant cover as the junipers grow more dominant.

Noxious Weeds

Under Alternatives A, B, and C, implementation of project design features to avoid disturbance of noxious weed sites (including Dalmation toadflax, Canada Thistle, and musk thistle found in the proposed project areas) would reduce the chance of dispersing noxious sources with machinery, vehicles, shoes or clothing. Requiring washing of logging equipment prior to use on BLM-administered lands would minimize the chance of noxious weed expansion due to harvest and treatment activities.

Alternative D, the No Action Alternative, would have no impacts on noxious weeds. Noxious weed location and treatment programs would continue as described in Chapter 3.

Wildlife and Fisheries

Terrestrial Animals

Under Alternatives A, B, and C, impacts to most wildlife species would be low to moderate. Proposed treatments would improve or maintain forest health, which would result in improving habitat for most forest dwelling animals. Thinning around old-growth trees should improve their health and benefit late-seral dependant wildlife species. Impacts to wildlife common to the proposed area are described in more detail in the KFRA FEIS Volume I, page 4-44 to 4-90.

The general understory thinning and light selective harvest of the overstory proposed in Alternatives A and B would have short-term adverse impacts to species, such as deer and elk,

that are dependent on thermal and hiding cover. It is anticipated that canopy closure would be reduced by 10 to 40 percent in the commercial timber harvest areas and by 10 to 95 percent in the noncommercial treatment areas.

The proposed action is to treat approximately 35% of the total analysis area and leave untreated approximately 65% of the analysis area. Under Alternatives A, B, and C, thermal and hiding cover would be reduced in the treatment areas. However, in those three alternatives, thermal and hiding cover adjacent to the proposed project units or salvage activities would be adequate for cover-dependent species. Juniper treatment activities would also reduce thermal and hiding cover while improving forage conditions for big game species and critical meadow and shrub habitat for other species. On public lands, thermal and hiding cover adjacent to the proposed juniper treatment areas would be adequate for cover dependant species.

Meadow rehabilitation projects proposed in Alternatives A, B, and C would increase the size of currently existing meadows by removing encroaching tree and shrub species. This would increase both the quantity and quality of available forage for big game species and critical meadow habitat for other meadow dependant species.

Under Alternative D (No Action), fuels would continue to accumulate and no thinning benefit would occur. Tree mortality in overstocked stands, including eagle territories, would be expected to continue. The potential for a stand-replacing wildfire that could have severe impacts to wildlife would continue to be high in many areas.

Alternative D would not rehabilitate any of the meadows. Forage conditions for big game animals would decline as the junipers continue to encroach upon meadow areas. Habitat conditions for other meadow dependant animals would continue to decline as well.

Aquatic Animals

Under Alternatives A, B, and C, impacts to aquatic animals would be low because no perennial streams are within the proposed project areas and intermittent drainages and water impoundments are being protected by riparian reserve buffers. In addition, only activities or treatments designed to promote Aquatic Conservation Strategies would be conducted within any riparian reserve, and all proposed activities (including road construction) would conform to the project design features for Water Resources (Appendix A-2). Such conformance would keep expected impacts to water resources and aquatic animals to a minimum.

Forest and juniper woodland treatments described in Alternatives A, B, and C, could create minor water quality and quantity improvements by reducing the amount of juniper woodland and removing some commercial forest trees over the landscape (see page 23 of this EA). Increases in water quantity could benefit water dependant species. More water would be available for intermittent streams, ponds, reservoirs and wetlands and the species dependant upon them. However, the effects of the proposed treatments to water quantity and quality, as described in the water resources impacts, would be minor and may not be detectable.

Alternative D (No Action) would have some minor impacts to aquatic animals because this alternative does not allow any harvest activities, road construction or yarding. The impacts would be from continuing use of existing roads presently located in the riparian reserves. Fuels buildup would continue to occur and could contribute to stand-replacing wildfires that could cause significant impacts to water quality and subsequently aquatic animals.

Juniper woodlands would continue to expand and could be expected to have some impacts on the amount of water available in the watersheds.

Special Status Species

Special Status Animals

Threatened and Endangered Species

Impacts to threatened and endangered animal species are expected to be minimal under all alternatives. Consultation with the U.S. Fish and Wildlife Service, per the Endangered Species Act, is currently being conducted and would be completed prior to any implementation of the proposed projects or the “No Action” alternative. Any adverse impacts would not exceed those described in the KFRA FEIS/ROD.

Under Alternatives A, B, and C, seasonal restrictions of operations and buffering nest site areas would limit impacts to bald eagles from treatment activities. In Alternatives A and B, proposed thinning around high resource value trees, including eagle nesting and roosting trees, would benefit bald eagles by enhancing the health of those trees.

Alternative C (salvage only) would not provide thinning benefits. Alternative C would harvest some trees that would potentially provide eagle habitat for roosting sites. However, the snag retention guidelines in the PDFs. would retain adequate snags for bald eagles and other cavity nesters.

Alternatives A, B, and C would not impact the Lost River or short nosed suckers. The following factors would make it unlikely that the proposed project activities would impact the sucker fish:

- Implementation of PDFs for water resources (Appendix A-2).
- There are no perennial or fish bearing streams in the proposed project areas.
- The Lost river is four miles, at its closest point, from the proposed project areas.
- No direct drainages lead from the proposed project areas to the Lost River.
- The presence of riparian buffers and conformance with Aquatic Conservation Standards.

Some minor water quality benefits, that could improve sucker fish habitat, would be expected from treatment of juniper woodlands. Removing juniper trees from the landscape would make more water available to the watershed (see page 23 of this EA).

Alternative D (No Action), would not harvest or treat any of the proposed project areas identified in the action alternatives. No impacts to Threatened or Endangered species associated with road building, equipment use, or harvesting would occur. This alternative would not provide a thinning benefit to bald eagle nesting and roosting trees. If stand conditions remain overcrowded, the health of such trees could decline. Alternative D would not reduce fuels or fire hazards in the analysis areas. As a result, a severe wildfire could impact bald eagle habitat by killing nesting and roosting trees. Such a fire could also indirectly impact sucker fish if large areas of mineral soil were exposed, contributing to runoff and sedimentation.

Other Special Status Species

Under Alternatives A, B, and C, seasonal restrictions of operations and buffering nest site areas, would limit impacts to northern goshawks (Bureau Sensitive Species) and golden eagles (Oregon State Sensitive Species) from treatment activities. In Alternatives A and B, proposed thinning around high resource value trees, including goshawk and golden eagle nesting and roosting trees, would benefit both species by enhancing the health of those trees.

Alternative C (salvage only) would not provide thinning benefits. Alternative C would harvest some trees that would potentially provide goshawk and golden eagle habitat for roosting sites. The snag retention guidelines in the PDFs., would retain adequate snags for golden eagles and goshawks.

Alternative D (No Action), would not harvest or treat any of the proposed project areas identified in the action alternatives. No impacts to goshawks or golden eagles associated with road building, equipment use, or harvesting would occur. This alternative would not provide a thinning benefit to nesting and roosting trees. If stand conditions remain overcrowded, the health of such trees could decline. Alternative D would not reduce fuels or fire hazards in the analysis areas. As a result, a severe wildfire could impact goshawk and golden eagle habitat by killing nesting and roosting trees.

Expected impacts from Alternatives A, B, and C to the Lost River and short-nosed suckers would be minimal. Impacts from treatment activities in the three proposed project areas would have little if any impacts to water quality and sucker habitat in the Lost River. No perennial streams exist in the proposed project areas. Riparian reserve buffers and the implementation of the PDFs for water resources (see Appendix A-2) would minimize impacts to water quality and the sucker fish in Lost River.

Some minor water quality benefits could be expected from treatments of juniper woodlands. Removing juniper trees could make more water available to the watershed..

Special Status Plants

Project design features included to avoid disturbance of special status plant populations would result in no expected impacts to special status species. Harvest units, roads, and yarding systems would avoid special status plant sites.

Livestock Grazing

Treatment activities proposed in Alternatives A, B, and C would have a variable positive effect on livestock grazing due to an increase of palatable, herbaceous plant species that would become more abundant if canopy closure was reduced. Removal of some competing trees has a tendency to allow other plants to increase in abundance and vigor. This positive effect would remain until the canopy closure and/or density of trees revert back to pretreatment levels. There could be a short-term (0-2 years) reduction of forage amounts due to ground-disturbing impacts of the harvesting equipment and prescribed fire in some areas. Observations of the grazing use and vegetation conditions in the proposed harvest areas by BLM range personnel indicate that the impacts would be minor and that they would not exceed impacts described in the FEIS.

In non-forest areas, reduction of juniper encroachment in meadows and shrub areas would increase available forage and therefore have a positive effect on livestock grazing.

Alternative D (No Action) would have no short-term impacts on grazing. Over a longer time frame, available forage would decline as junipers, shrubs, and conifers continue to encroach upon meadows and rangelands.

Additional information on grazing impacts of forest and juniper woodland treatments is available in the Klamath Falls ROD/RMP (page 4-135 in FEIS).

Cultural Resources

Before any ground-disturbing activities are initiated, all treatment areas will be surveyed for cultural resources. Survey reports will also have been sent to the Oregon State Historic Preservation Office (SHPO) for review and filing. This process has been performed for much of the area involved in this environmental assessment (see page 18 of this EA). The Klamath Tribes would be consulted as directed by the National Historic Preservation Act. Location and avoidance of sites identified during surveys would result in no impacts to known cultural resource sites as a result of the action alternatives (Alternatives A, B, and C). Another factor that reduces the likelihood of impacting prehistoric sites is that many of the prehistoric sites are located within scabrock flats which are outside proposed harvest units and would not be disturbed.

BLM Class III surveys generally do not incorporate sub-surface techniques for locating archaeological sites. Surface survey methods within a forested environment may not detect some sites due to the organic litter layer obscuring site evidence. It is difficult to avoid or protect sites that may have been missed during surface survey and are encountered during treatment activities. If any additional artifacts or sites were located during treatment activities, all treatment activities would be curtailed until the cultural resources were evaluated and protected.

With respect to cultural resources, and when considering alternatives across the entire analysis area, the alternative with the greatest potential to cause ground disturbance would also be the alternative with the greatest risk to sites not discovered during the surface surveys. Alternatives A and B would impact the most acres. All alternatives except alternative D would cause some ground disturbance associated with the proposed treatment activities.

Alternative D (No Action) would not include any ground disturbing activities and therefore would cause no impacts to cultural resources.

Recreation/Visual Resources

Under Alternatives A, B, and C, only temporary, minor disruption to recreational uses would occur during treatment activities. Short-term disturbances to recreationists and adjacent landowners from truck traffic, noise, and dust associated with treatment activities in the proposed project areas would be expected.

Some recreational opportunities would be lost for off-highway vehicles where rough, unmaintained roads are blocked or obliterated. Off-highway recreational opportunities would also be lost if those same roads were improved or surfaced.

Under Alternatives A, B, and C, a positive recreational benefit of timber harvest activities could occur through increased availability of firewood and mushroom gathering opportunities close to the rural interface areas.

Acquisition of additional legal access for the Swan Lake Rim area through the timber sale process would be a positive benefit for recreationists.

The impacts associated with the selective harvest, thinning or mortality salvage, and minimal road building described in alternatives A, B, and C, would not exceed those described in the Final RMP (pages 4-97 to 101). Some additional Project Design Features have been proposed to reduce the visual impact of harvesting along major roads within VRM class II areas and within 1/4 mile of rural interface areas(see Appendix A-1). For all alternatives, VRM class objectives for the proposed treatment areas would be met (see page 19 of this EA).

Commercial treatment areas along major roads within VRM class II or within 0.25 mile of rural interface should have a light single tree selection. Scenic quality would be maintained by maintaining or enhancing stand diversity through leaving a variety of size classes of trees and saving large ponderosa pine along roads . Small (hand) piles of slash, dispersed for firewood gathering, along with no large landings/log decks, obvious skid trails, and minimal ground disturbance near major roads would also maintain scenic quality within the VRM II areas mentioned above.

Under alternative D (No Action), no impacts to visual resources would be expected.

Rural Interface Areas

Alternatives A, B, and C would have significant impacts to rural interface areas. These alternatives would include treatments adjacent to private lands and residences. Both alternatives would treat forest stands next to private lands to reduce fuel loads and decrease the potential for severe wildfire. Views would change as conifer stands and juniper woodlands are thinned and become more open. The VRM guidelines listed above would prevent major impacts to residential views.

Under Alternatives A, B, and C, short term-impacts to local residents would be expected from treatment activities. Equipment noise and dust and smoke from prescribed fires are examples of such impacts. Dust would be kept to a minimum by limiting truck speeds and employing water or other dust abatement materials to control dust on haul roads used during treatment/harvest activities.

Treatment and harvest activities associated with the action alternatives would not occur on private lands. Treatment activities would occur only on BLM administered lands. Property lines would be located and clearly marked to keep contractors on BLM administered lands. Fences and other improvements would be protected.

Fuels treatment and harvest activities would be expected to produce slash that could be utilized by local residents for fuel wood.

Alternatives A, B, and C, would provide the following benefits to the rural interface:

- healthier adjacent forest stands
- lower risk of wildfires and lower risk of intense wildfires
- lower risk of insect and disease outbreaks

Alternative D (No Action) would not treat forest and rangelands in the rural interface areas. Overstocked stands would remain. Tree health would continue to decline. The risk of wildfire and severe wildfire would remain high.

Social/Economics

The timber sale and harvest activities described in this EA would provide economic benefits through local and regional logging and manufacturing jobs. Other potential jobs associated with the proposed action include reforestation and prescribed fire work. The timber removed would also contribute to the local county tax base.

Alternative A would harvest the most forest products (5,500 CCF) and would therefore provide the greatest economic benefit to the local areas. Alternative B would harvest less (5,000 CCF), but would still provide a substantial economic benefit. Alternative C would harvest a much lower volume (3,000 CCF), but would provide some benefits. Alternative D would not harvest any forest products and would not provide a product based economic benefit to the local communities.

Cumulative Impacts

Forest and Rangeland Treatments

The cumulative impacts from implementing these forest and rangeland treatment/harvest projects are expected to be low. No adverse impacts beyond those described in the Resource Management Plan/Environmental Impact Statement, Prescribed Fire EA, or Noxious Weed EA are expected.

Water Resources

Vegetation treatments that remove substantial amounts of existing vegetation could have some cumulative impacts to water resources. The removal of conifer trees through harvest activities and junipers through thinning and meadow restoration would result in an increase in water released from the watershed. However, studies of cumulative effects to water resources resulting from forestry practices suggest that measurable change in magnitude of peak flows does not occur until approximately 20 to 30 percent of the watershed is clearcut. In commercial forest areas, the BLM stands remaining after harvest would not be comparable to clearcut harvests. Few of the adjacent private commercial forest lands would be clearcut; however, some may experience heavier harvest levels than those described in the Proposed Alternatives.

If all 3,150 to 4,200 acres of the proposed noncommercial treatment areas were accomplished and analyzed as “clearcut” acres, this would amount to less than one percent of the total watershed acres (all ownerships). In addition, many of the noncommercial treatments would include projects like precommercial thinning or removal of encroaching juniper. These treatments would not be comparable to clearcuts. The forest treatments proposed in this EA and those likely to take place and currently existing on adjacent private and federal lands would not approach the 20 to 30 percent watershed clearcut level required to produce a detectable increase in water released from the watershed.

The forest and range treatments proposed in this EA, in combination with activities of adjacent ownerships, could increase peak flows; however, the level of effect resulting from implementing any of the alternatives on public lands would be low and may not be detectable.

Wildlife

The southern portions of Swan Lake Rim and the Bly Mountain area are critical big game habitat. Impacts of the proposed actions, in conjunction with forest harvest activities of adjacent landowners, would have some effect on thermal and hiding cover and available forage. Any forest treatment that removes vegetation or trees would at least temporarily reduce cover. The proposed actions, in addition to harvest activities of adjacent landowners, would reduce thermal and hiding cover in the short term. However, thermal and hiding cover in the Proposed Project areas has not been identified as limiting to big game habitat. Sufficient cover exists on BLM and private land areas not identified for treatment.

The activities of adjacent landowners and the Proposed Actions would have the cumulative effect of increasing available forage for big game species while reducing thermal and hiding cover.

Roads

If the proposed projects are implemented, total miles of roads on BLM-administered lands would remain about the same. Some roads would be blocked and obliterated or allowed to naturally revegetate while others would be reconstructed, maintained, or improved. The one mile of proposed road construction would likely be offset by roads proposed for obliteration or blocking. After all treatment activities are completed, the net change in total miles of roads in the analysis area would be minor in either direction.

Any proposed road closure or obliteration would not impact access to private lands.

There are no irreversible/irretrievable commitment of resources identified or expected from implementing the forest and rangeland treatments/harvests proposed in this Environmental Assessment.

Appendix A-1. General Project Design Features

Project design features (PDFs) are specific measures included in the design of proposed projects to minimize adverse impacts to the natural and human environment. The PDFs for the proposed action were developed by members of an interdisciplinary team (IDT).

Project Design Features that mitigate impacts to watershed, wildlife, fisheries, and other resources are applied as described in the KFRA FEIS.

The project design features listed below are common to all alternatives unless otherwise specified. Additional project design features for watershed and soil resources are in Appendix A-2.

Timber Reserved From Cutting

In the Matrix and for each proposed unit, retain an average of at 5 to 10 green trees per acre from the larger size classes present in the unit.

For uneven-aged stands, maintain a multi-strata stand structure. Thin primarily from below to maintain the vigor of the larger trees. Remove only a limited number of large overstory trees.

Thin trees to basal area range from 70 to 120 square feet per acre (target is 90).

On all Matrix lands, retain a minimum of 1.4 snags or cull trees (minimum DBH 14 inches) per acre, where available.

On all Matrix lands, retain (where available) a minimum of 50 linear feet of down logs that are greater than or equal to 12 inches in diameter and 8 feet long.

Reserve (in the cutting area) any identified wildlife trees that are cut or knocked down.

General Riparian Reserve Guidelines

Retain Riparian Reserves, per the Northwest Forest Plan standards and guidelines, along all wetlands, seasonally flowing (intermittent), and perennial streams. No perennial streams exist in the Proposed Project areas.

Flag and post riparian reserves within the treatment areas, as follows:

- Intermittent streams: **120-foot** RR (height of one-site potential tree) on each side of the stream.
- Constructed ponds and reservoirs and wetlands greater than 1 acre: **150-foot** RR buffer.
- Lakes and natural ponds: **300-foot** riparian buffer.

On lakes, reservoirs, and ponds, measure RRs as slope distance from the historical high water marks. On streams and drainages, measure RRs as slope distance from the high water and/or floodplain boundaries.

Some harvest may occur in the riparian reserves as previously described. Any harvest inside a riparian reserve would be conducted only to meet Aquatic Conservation Strategy objectives in that riparian reserve and only with the concurrence of the Klamath Falls Resource Area Riparian Team and Interdisciplinary Team.

All snags would be retained in riparian reserves except where safety, fire hazard, or potential resource damage dictate their removal.

Hazard trees adjacent to roads or recreation sites would be felled in riparian reserves, including within the no cut buffer. Felled hazard trees would be left in the riparian reserves, except where adequate down woody debris exists or where they would create resource damage. Hazard trees felled within the no-cut buffer would be left in place except where they would cause resource damage.

Generally, harvest/treatment methods that would disturb the least amount of soil and vegetation (yarding over snow or frozen ground, pulling line to each tree, minimizing skid trails) would be used in riparian reserves.

Other Buffers

- Wet meadows, seasonal wetlands, and wooded swamps: 150-foot buffers.
- Dry meadows and cliff/talus slopes: 100-foot buffers.

Note: All buffer widths are specified in the KFRA ROD page B-4 (Table R1).

Logging

Falling

Require directional falling away from property lines, reserve trees, roads, streams, springs, meadows, cultural resource buffers, riparian reserves, fences, and other improvements.

Restrict log lengths to 41 feet or less in areas where stand damage is occurring.

No limbing would be allowed except where large limbs are causing damage to the residual stand. Tops would remain attached to the last log.

A mechanical harvester with a lateral boom of at least 20 feet could be used for falling trees 20 inches DBH and smaller.

On slopes in excess of 30 percent, hand fall all trees designated for cutting to the lead of designated skid trails.

Yarding

Tractor yarding would be the primary logging system used.

Require whole tree yarding in areas of ground-based yarding, except where limbing and/or bucking is required to protect residual trees or where large cull logs are left for down woody

debris purposes. Tops would remain attached to the last log and would be yarded to landings.

Cull logs greater than 12 inches in diameter at the small end, that are not removed from the landing, would be yarded back into the sale area to locations determined by a resource specialist or decked at the landing separate from the landing slash.

Restrict ground-based logging equipment to designated skid trails except to yard bunched piles located off the skid trails. Require line pulling and winching in hand falling areas.

Restrict all ground-based yarding to slopes averaging less than 35 percent.

No yarding would occur directly up or down any stream or drainage.

Minimize designated crossings of riparian reserves and the size of yarding corridors.

Do not locate any new landings within riparian reserves, unless approved by the KFRA riparian team.

The maximum width of any yarding corridor through a riparian reserve would be 30 feet. Do not locate any new skid trails in riparian reserves, except at designated crossings. Any crossings that are required would be designated by authorized personnel prior to yarding and also be located at right angles to the drainage.

Logging on snow would be allowed in conformance with seasonal restrictions when snow depths average 20 inches or greater and negligible ground surface exposure occurs during the operation. Logging on frozen ground may also be allowed when the ground is frozen to a depth of 6 inches.

The following restrictions would apply to mechanized equipment:

- Restrict operations to dry conditions (generally less than 15 to 20 percent soil moisture by weight).
- Use the lowest ground pressure machine capable of meeting objectives, when available.
- Do not allow a mechanical harvester on slopes averaging greater than 35 percent without approval of authorized personnel.

Seasonal Restrictions

Require seasonal restrictions to prevent soil erosion and to protect wildlife. Require seasonal restrictions in areas where the following wildlife species are actively nesting: bald eagle, golden eagle, northern goshawk, survey and manage species, and protection buffer species. Seasonal restrictions for specific species can be found on pages 231-240 of the KFRA FEIS.

To protect riparian areas, soil resources, and water quality while limiting erosion and sedimentation to nearby streams and drainages, do not allow logging operations during the wet season (October 15 to May 1). Permit logging activities during this time period if frozen ground or sufficient snow is present, or as approved by a resource specialist.

To protect soil resources and water quality, close unsurfaced roads (on BLM administered lands) during the wet season (October 30 to June 1) unless waived by authorized personnel.

Threatened and Endangered/Special Status Species/Other Wildlife Protection

Reserve a 30-acre buffer around the eagle nest sites in the analysis area, and restrict operations near the nest site (KFRA ROD, page 38). Within designated eagle habitat areas, emphasize silvicultural treatments that encourage maintenance and recruitment of habitat components necessary for nesting and roosting eagles. Retain the largest snags (greater than 24 inches DBH). Give preference to ponderosa pine, sugar pine, and Douglas-fir with large open limb structure suitable for perching by eagles (KFRA ROD, page 38).

Reserve a 30-acre buffer around any northern goshawk nest sites in the analysis area (KFRA ROD, page 38).

Allow purchaser to pump water only out of designated water sources. Notify wildlife and hydrology staff at least one week prior to intended pumping dates to confirm adequate water supplies.

Close roads to reduce wildlife disturbance. Where possible after treatment is completed, implement road closures to approach objective of 1.5 miles/section open road density.

In Timber Sale Stipulations, include Special Provision E4 (limited operating season) for Threatened or Endangered Species, which provides protection for Federally listed species, Federal Candidates, and sensitive or state-listed species protected under BLM Manual 6840, protection buffer species, survey and manage species, and specific species listed for protection in the KFRA ROD/RMP.

Apply seasonal operating restrictions to actively nesting raptor species.

Apply seasonal operating restrictions to any active elk calving areas located during the duration of this project.

Specific to the northern goshawk, consider recommended habitat guidelines issued by the BLM Oregon State Office (memorandum OR-94-112).

Visual Resources

Where possible, maintain visual screening along roadways.

Near residence areas, concentrated recreation use areas, or Special Areas, implement the following design features to reduce visual impacts from harvesting:

- Disperse small (hand) piles of slash for firewood use.
- Do not create large landings.
- Minimize number of skid trails and amount of ground disturbance
- Minimize damage to residual trees through careful timber falling and yarding.

All treatments will meet appropriate Visual Class objectives specified in the KFRA ROD/RMP (page 44).

Cultural Resources

Follow procedures for cultural protection and management outlined in the KFRA ROD/RMP (page 43), and protect identified sites by buffering.

In accordance with guidelines and directives in the Klamath Falls Resource Area RMP, BLM regulations, and the National Historic Preservation Act, areas not included in previous archaeological surveys will be surveyed before any ground-disturbing action is undertaken.

Road Construction, Maintenance, and Use

This EA will analyze for up to 1 mile of new road construction. A long-term transportation management plan for the analysis area to determine which roads are necessary and which can be blocked is being prepared concurrently with this EA. In addition, as each sale is finalized, a final determination on roads within the contract area will be made and implemented as part of the timber sale contract.

Where required, primary access roads would be maintained, renovated, or improved to facilitate general access. Some secondary roads not identified for closure would receive maintenance or improvement in areas of active erosion. Examples of improvements would include spot surfacing and installation of culverts or other drainage features where needed to protect resources. Other secondary roads that are more stable would receive minimal or no maintenance to provide high clearance vehicle recreation opportunities.

Obliterate or close some roads, including spur roads not needed for continued resource management, after completion of the proposed management activities. Roads to be obliterated or closed would be identified by resource specialist and the KFRA Interdisciplinary Team (IDT). All new spur roads would be closed after completion of proposed management activities.

Currently closed roads that would be opened to facilitate harvest activities would be closed again after completion of those activities. The roads would be closed in a similar fashion to the currently existing closures.

Use dust pallatives or surface stabilizers (water) on roads during dry periods to prevent surface material loss and the buildup of fine sediments that may wash off into water courses. Closely control application of dust pallatives and surface stabilizers, equipment cleanup, and disposal of excess materials to prevent contamination of water resources.

Road graders used for road construction or maintenance would grade towards any known noxious weed infestations. If a good turnaround area does not exist within 0.50 mile to allow grading towards the noxious weed infestation, the operator would leave the residual material

within the boundaries of the noxious weed infestation. The grader would not grade through noxious weed infestations.

Environmental Protection/Forest Health Features

Require cleaning of all equipment and vehicles prior to moving on-site to prevent spread of noxious weeds. Also, if the job site includes a noxious weed infestation, require cleaning of all logging and construction equipment and vehicles prior to leaving the job site. Removal of all dirt, grease, and plant parts that may carry noxious weed seeds or vegetative parts could be accomplished by using a pressure hose to clean the equipment.

Mow noxious weeds in the immediate area of yarding operations to ground level prior to seed development.

Conduct monitoring activities related to proposed treatments as described in the Klamath Falls ROD.

Within Annosus root disease centers, and in a strip 50 feet around, remove the most susceptible tree species (Ponderosa pine), and plant bitterbrush, sage, aspen, and grasses and forbs. Treat conifer and juniper stumps with borax to prevent the spread of root diseases.

Construct waterbars on roads, spurs, skid roads, yarding corridors, and fire lines prior to fall rains, and according to specifications outlined in the Best Management Practices in the KFRA RMP and Project Design Features in Appendix A-2.

Where feasible and as designated by authorized personnel, spur roads, skid trails, and landings that are not needed for a permanent logging system would be ripped to remove ruts, berms, and ditches and/or to reduce soil compaction.

During yarding and piling operations, adhere to practices and methods in the project design features in Appendix A-2.

Limit cumulative effects of unmitigated detrimental soil conditions to 20 percent of the total acreage within an activity area (the total area of ground, such as a timber sale unit or a slash treatment area including roads, skid trails, and landings). Detrimental soil conditions include compaction, displacement, and creation of adverse cover conditions. Sites where the 20 percent standard is exceeded would require treatment, such as ripping, backblading, or seeding.

Riparian Reserves

Allow contractors to pump water only out of designated water sources. Notify wildlife and hydrology staff at least one week prior to intended pumping dates to confirm adequate water supplies.

Designate riparian reserves according to the guidelines in Appendix A-2.

Do not permit refueling, equipment maintenance, fuel storage, or other handling of petroleum products or other chemicals in or adjacent to riparian reserves.

Do not permit ripping, piling, or mechanical site preparation (except for designated skid trail crossings, landings, roads, or yarding corridors) in riparian reserves, except for riparian wetland enhancement or wildlife projects designed to meet Aquatic Conservation Strategy Objectives of the Final Supplemental EIS and objectives in Appendix C of the KFRA RMP.

Avoid removal of down trees and logs in riparian reserves, unless they are causing resource damage. Any removal would be approved by KFRA Riparian Team.

Fire Prevention and Control

Require all contractors to adhere to Oregon State fire safety and preparedness rules and regulations and Industrial Fire Precaution Class restrictions as directed by authorized personnel.

Slash Disposal/Site Preparation (Machine Ripping and Piling)

Re-introduce fire in forest stands on a random basis as addressed in environmental assessment (EA # 014-94-09). In all alternatives, prescribed fire (applied mostly as underburning) could occur in some matrix and riparian reserve areas after timber harvesting to improve plant and wildlife diversity and reduce fuel loads in the area. No ignition would occur within 50 feet of the stream. Fire would be allowed to back into riparian reserves. Areas to be underburned would be selected by either site-specific election or through a random process discussed in the prescribed fire EA.

Within the proposed analysis area, elected prescribed fire would be used on approximately 500 to 2,000 acres for hazard reduction. In addition, elected prescribed fire would be used as a site preparation tool to prepare sites for reforestation.

Where feasible, require whole tree yarding with limbs attached. Where potential exists to damage the residual stand, trees will be limbed and bucked to keep the tree top attached to the last log. Landing debris not removed for sawlog material may be chipped, shredded, or ground and removed from the site. In isolated areas, some burning of residual landing material would occur.

Cull logs 12 inches and larger at the small end, that are yarded to the landings would be utilized or yarded back into the units or decked separate from landing slash.

Lop and scatter residual slash and damaged saplings in the units to depths no greater than 12 inches.

Conduct all burning in accordance with standards established by the Oregon Smoke Management Plan.

Some reserve trees, particularly high resource value trees, would have slash pulled back by hand and piled at least 20 feet away from the base of the tree.

Conduct piling of any slash in riparian reserves by hand. Any excessive concentrations of logging slash in riparian reserves resulting from the current timber sale would be removed prior to fall rains and placed above the high water mark.

Within 100 feet above culverts, all logging slash resulting from the current timber sale, would be removed and placed above the high water mark.

Conduct mechanical site preparation activities, such as slash piling, only when soil moisture is less than 15 to 20 percent.

Down Woody Debris

Retain, where available, a minimum of 50 linear feet of down logs on the site. The minimum diameter of the down logs would be 8 inches.

Appendix A-2: Project Design Features for Water Resources

The best management practices (BMPs) selected for these proposed treatments are designed to achieve the objectives of maintaining or improving water quality and the protection of riparian-wetland areas. The goal of the practices listed below is to prevent or mitigate adverse impacts while meeting other resource objectives.

Maps/Contract Requirements

- (1) Specify water sources available for purchaser's use on maps and in the timber sale contracts.

Riparian Reserve Designation

- (1) Establish riparian reserves on streams and water bodies as listed in the table below. Each proposed treatment area will be surveyed to determine the classification of streams and the location of wetlands, ponds, reservoirs, and unstable and potentially unstable areas. To use this table:
 - a) Determine if stream in a proposed activity area is fish bearing.
 - b) Determine if stream is perennial or intermittent.
 - c) Determine if area is unstable or potentially unstable (this will be a rare designation in the KFRA).

Table A-2.1. Riparian Reserve Widths by Land Type

Stream/Waterbody/Wetland Type	Slope Distance of Riparian Reserve (in Feet)
Fish-Bearing Streams	240 feet
Perennial, Nonfish-Bearing Streams	120 feet
Intermittent Streams	120 feet
Constructed Ponds and Reservoirs and Wetlands greater than 1 acre	150 feet
Lakes and Natural Ponds	300 feet
Wetlands less than 1 acre and Unstable and Potentially Unstable Areas	The extent of unstable and potentially unstable areas or the wetland to the outer edges of the riparian vegetation.

A site-potential tree is defined as the average maximum height of the tallest dominant trees (200 years old or more) for a given site class. In the Bly Mountain/Swan Lake Rim/Whiteline Reservoir area, the height of a site potential tree was determined to be **120 feet**.

Minimum widths of riparian reserves are expressed as whichever slope distance is greatest. The widths listed in the above table are those that would be applied to one side of the stream. For example, a fish-bearing stream would have a **480-foot buffer (240 feet each side)**. In addition to

these widths, riparian reserves must extend from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain and to the outer edges of riparian vegetation. Wetland, pond and reservoir riparian reserves must include the body of water or wetland and the area from the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable or potentially unstable areas. Reservoir and pond riparian reserves are to be measured from the edge of the maximum pool elevation.

(2) Use the following sequence of decisions when establishing riparian reserve boundaries:

- a. *Identify Floodplain Boundaries* The entire 100-year floodplain should be included within the riparian reserve. The topographic break in slope between hillsides and the relatively flat floor of the stream valley will define a floodplain boundary. Floodplain soils and substrates are characterized by rounded edges on gravels, cobbles, or boulders as a result of being tumbled by streams. In contrast, hillslope substrates are more sharp and angular. Vegetation may change in age or composition at floodplain boundaries; however, many floodplains have forest vegetation as old or older than hillslope stands. Smaller, incised (downcut) streams and lower order (first, second, and third) streams frequently lack floodplains. Also, floodplains may not exist along non-riverine wetlands and lakes. In the absence of floodplains, historical high water levels should be used (see Section b, below).
- b. *Locate Margins of Active Channels and Shorelines (High Water Mark)*. After floodplains (if they exist) have been identified, riparian reserves are delineated. Delineation of the riparian reserve starts at the edge of the active channel or mean high water level, and extends outward horizontally on both sides. Active channels consist of all portions of the stream channel carrying water at normal high flows, not just the current wetted channel. This includes side channels and backwaters which may not carry water during summer low flow. All islands and gravel bars are included as part of the active channel. Active channel boundaries are indicated by abrupt topographic breaks where frequent channel scour has steepened streambanks. Frequently, plant abundance is reduced in areas of active channel modification, and plant communities are dominated by herbs and forbs. The high water mark is often marked by the vegetative litter carried in high flows and then deposited or caught in live vegetation.

Riparian reserves around reservoirs, ponds and lakes should be measured from the high water level. This level may be indicated by evidence of erosion by wave action, reduced plant cover, topographic features and sharp transitions in plant community composition.

- c. *Lay Out Riparian Reserve Boundaries*. For optimal management of riparian and other resources, riparian reserves should have variable widths that are delineated at ecological boundaries, not at arbitrary distances from the stream, lake or wetlands. Riparian-wetland areas are naturally irregular or asymmetrical in shape, in response to local topography, geology, groundwater, and plant communities. Consideration of topographic irregularities can both protect riparian resources and simplify harvest unit layout. Avoid straight, uniform riparian reserve boundaries.

Riparian Reserve Protection

- (1) Design timber harvest within riparian reserves to meet Aquatic Conservation Strategy objectives.
- (2) Retain all snags in the riparian reserve except where safety or fire hazard dictate removal (RA-2).
- (3) Avoid refueling, equipment maintenance, fuel storage, or other handling of petroleum products or other chemicals in or adjacent to riparian reserves.
- (4) No ripping, piling or mechanical site preparation (except for designated skid trail crossings, roads, or yarding corridors) will occur in riparian reserves.
- (5) Directionally fell trees away from riparian reserves when harvesting within a tree length of any stream or riparian reserve.
- (6) Where feasible, leave in place unbucked and unlimbed any hazard trees felled within a riparian reserve, consistent with management for fish habitat or other resource protection.
- (7) Avoid yarding through riparian reserves when possible.
- (8) Designate yarding corridors prior to yarding.
- (9) Minimize number and width of yarding corridors. The maximum width of any corridor will be 30 feet. No more than one yarding corridor per 200 linear feet of stream will be allowed.
- (10) Leave vegetation in riparian reserves that is cut for yarding corridors to meet stream and riparian objectives. Consider falling conifers into the stream and leaving them to contribute to the stream ecosystem.
- (11) Do not place skid trails in riparian reserves except at designated crossings. Where feasible, locate skid trails perpendicular to riparian reserves and stream channels. Avoid tractor yarding across fishery streams and associated riparian reserves. All skid trails that enter riparian reserves will be seeded with native species after use or prior to first rains (whichever comes first), or skid trails will be planted with conifers.
- (12) Install temporary stream crossings across riparian reserves of non-fishery streams prior to tractor yarding operations. Stream crossings will be selected and designed with input from a hydrologist, fish biologist, or riparian specialist. Select stable, naturally armored areas. Minimize the area of disturbance. Use a culvert and clean rock or logs for temporary stream crossings. Install during low flows and remove prior to fall rains in the same season.
- (13) Avoid removal of down trees or logs in stream channels and riparian reserves.

- (14) Remove excessive concentrations of logging slash in streams for a distance of 100 feet above culverts. Hand pile slash above high water mark.
- (15) Avoid locating new landings within 50 feet of riparian reserves.

Landings

- (1) Minimize size and number of landings.
- (2) Locate landings at approved sites.
- (3) Avoid placing new landings adjacent to or in meadows or other wetland areas.
- (4) Clear or excavate landings to minimum size needed for safe and efficient operations.
- (5) Select landing locations considering the least amount of excavation, erosion potential, and where sidecast will not enter drainages or damage other sensitive areas.
- (6) Deposit excess excavated material on stable sites where there is no erosion potential.
- (7) Restore landings to the natural configuration or shape to direct the runoff to preselected spots where water can be dispersed to natural, well vegetated, gentle ground.
- (8) Return landings not needed for future resource management to resource production through ripping and/or revegetation with native species. Apply weed-free mulch and fertilizer, where appropriate.

Road Construction

- (1) Locate roads away from riparian reserves (RF-2).
- (2) Locate roads on stable positions (such as ridges, natural benches, and flatter transitional slopes near ridges and valley bottoms). When crossing unstable areas is necessary, implement additional mitigation measures.
- (3) Avoid headwalls, midslope locations on steep unstable slopes, seeps, old landslides, slopes in excess of 60 percent, and areas where the geologic bedding planes or weathering surfaces are inclined with the slope.
- (4) Locate roads to minimize heights of cutbanks. Avoid high, steeply sloping cutbanks in highly fractured bedrock.
- (5) Locate roads on well-drained soil types. Vary the grade to avoid wet areas.
- (6) Locate stream crossing sites where channels are well defined, unobstructed and straight. Minimize the area of road that enters a Riparian Reserve. Stream crossings will be designed with input from a hydrologist or riparian specialist.

- (7) Limit road construction to the dry season (generally between May 15 and October 15). When conditions permit operations at the limits of the dry season, keep erosion control measures current with ground disturbance, to the extent that the affected area can be rapidly closed/blocked and weatherized if weather conditions warrant.
- (8) Manage road construction to enable completion of any construction and to protect and stabilize bare soil prior to fall rains. Protective measures may include water bars, grass seeding, planting deep rooted vegetation, and/or mulching. Armor or buttress fill slopes and unstable areas with rock that meets construction specifications. Revegetation with native species is preferred, except where overriding concerns to reduce sediment dictate the use of annuals or other quickly establishing species.
- (9) Avoid sidecasting where it will adversely affect water quality or weaken stabilized slopes. Place excavated material away from Riparian Reserves.
- (10) Place surface drainage prior to fall rains.

Surface Cross Drains for Roads

- (1) Design cross drains in ephemeral or intermittent channels to lay on solid ground rather than on fill material to avoid road failures.
- (2) Design placement of all surface cross drains to avoid discharge onto erodible (unprotected) slopes or directly into stream channels. Provide a buffer or sediment basin between the cross drain outlet and the stream channel.
- (3) Locate culvert or drainage dips in such a manner to avoid discharge onto unstable terrain such as headwalls, slumps, or block failure zones. Provide adequate spacing to avoid accumulation of water in ditches or surfaces through these areas.
- (4) Provide energy dissipators (such as rock material) at cross drain outlets or drain dips where water is discharged onto loose material or erodible soil or steep slopes.
- (5) Place protective rock at culvert entrance to streamline water flow and reduce erosion.
- (6) Use the guide for drainage culvert spacing by soil erosion classes and road grade shown in Tables C-3 and C-4 in Appendix C of the ROD/RMP.
- (7) Use drainage dips in place of culvert on roads which have gradients less than 10 percent or where road management objectives result in blocking roads. Avoid drainage dips on road gradients greater than 10 percent. Dips should be designed with an adverse grade on the downhill side and, where economically feasible, should be armored with aggregate to prevent traffic (if the road is open) from cutting through the structure.
- (8) Locate drainage dips where water might accumulate or where there is an outside berm which prevents drainage from the roadway. The recommended spacing of drainage dips is $400 \text{ feet} \div \text{percent slope} + 150 \text{ feet}$ (for example, a 4 percent grade would have culverts installed at a $400/4 + 150 = 250$ feet spacing).

- (9) When sediment is a concern, design cross drainage culverts or drainage dips immediately upgrade of stream crossings to prevent ditch sediment from entering the stream.
- (10) Varying gradients is recommended in erodible and unstable soils to reduce surface water volume and velocities and culvert requirements.

Road Use, Improvement, Maintenance, Closure, and Obliteration

Road Use

- (1) Use seasonal restrictions on unsurfaced roads.
- (2) Remove snow on haul roads in a manner which will protect roads and adjacent resources. Remove or place snow berms to prevent water concentration on the roadway or on erodible sideslopes or soils.
- (3) Use dust palliatives or surface stabilizers to reduce surfacing material loss and buildup of fine sediment that may wash off into water courses.
- (4) Closely control application of dust palliatives and surface stabilizers, equipment cleanup, and disposal of excess material to prevent contamination or damage to water resources.

Road Improvement

- (1) Identify potential water problems caused by off-site disturbance and add necessary drainage facilities.
- (2) Surface inadequately surfaced roads that are to be left open to traffic during wet weather.
- (3) Keep road inlet and outlet ditches, catchbasins, and culverts free of obstructions, particularly before and after winter snowfall and spring runoff. However, hold routine machine cleaning of ditches to a minimum during wet weather.
- (4) Grading operations are to be conducted to prevent sedimentation and to dispose of surface water without ponding or concentrating water flow in unprotected channels. Schedule grading operations during time periods of the least erosion potential.

Road Maintenance

- (1) Conduct grading operations to prevent sedimentation and to dispose of surface water without ponding or concentrating water flow in unprotected channels. Schedule grading operations during time periods of the least erosion hazard (generally during the dry season, May 15 to October 15).

- (2) Retain vegetation on cut slopes and ditches unless it poses a safety hazard or restricts maintenance activities. Cut roadside vegetation rather than pulling it out and disturbing the soil.
- (3) Inspect areas subject to road or watershed damage during periods of high runoff.

Road Closure and Obliteration

- (1) Barricade or block roads using gates, guard rails, earth/log barricades, boulders, logging debris, or a combination of these methods. Avoid blocking roads that will need future maintenance (such as for culverts, potential slides, etc.) with unremovable barricades. Use guardrails, gates, or other barricades capable of being opened for roads needing future maintenance.
- (2) Provide maintenance of blocked roads in accordance with design criteria.
- (3) Install waterbars, cross drains, cross sloping, or drainage dips on blocked roads (if not already) to assure drainage. See Surface Cross Drains for Roads section for surface cross drain requirements.
- (4) Scarify, mulch (weed free), and/or seed blocked natural surface roads for erosion control.
- (5) Return roads or landings not needed for future resource management to resource production through ripping and/or revegetation with native species. Apply weed free mulch and fertilizer where appropriate.

APPENDIX C: SOIL RESOURCES (listed by project area)

C-1 Bly Mounta in Area

Soil Series	Slope %	Drainage	Permeability	Erosion Hazard
Barkley loam	0-2	well drained	moderate	slight
Calimus fine sandy loam	0-2	well drained	moderate	slight
Calimus fine sandy loam	2-5	well drained	moderate	slight
Capona loam	2-5	well drained	moderate	moderate
Dodes loam	2-15	well drained	moderately slow	moderate
Fordney loamy fine sand	0-2	excessive	rapid	slight
Lorella very stony loam	2-35	well drained	slow	high
Lorella-Calimus association, steep north slopes	15-35	well drained	slow	high
Nuss-Royst association, gently sloping	1-8	well drained	moderate	high
Rock outcrop-Dehlinger complex	35-65	well drained	moderate	moderate
Royst stony loam, 5 to 40 percent north slopes	5-40	well drained	slow	high

C-2 Swan Lake Rim Area

Soil Series	Slope %	Drainage	Permeability	Erosion Hazard
Bly loam	2-8	well drained	moderately slow	slight
Dehlinger very stony loam, 15 to 65 percent south slopes	15-65	well drained	moderate	moderate
Lorella very stony loam, 2 to 35 percent south slopes	2-35	well drained	slow	high
Lorella-Calimus association, steep north slopes	15-35	well drained	slow	high
Nuss-Royst association, gently sloping	1-8	well drained	moderate	high
Ponina-Rock outcrop complex, 1 to 8 percent slopes	1-8	well drained	very slow	high
Rock outcrop-Dehlinger complex, 35 to 65 percent slopes	35-65	well drained	moderate	moderate
Woodcock association, north	5-40	well drained	moderate	moderate
Woodcock association, south	5-40	well drained	moderate	moderate
Woodcock-Rock outcrop complex, 40 to 60 percent south slopes	40-60	well drained	moderate	moderate

C-3 Whiteline Reservoir Area

Soil Series	Slope %	Drainage	Permeability	Erosion Hazard
Bly loam, 2 to 8 percent slopes	2-8	well drained	moderately slow	slight
Lorella very stony loam	2-35	well drained	slow	high
Nuss-Royst association, gently sloping	1-8	well drained	moderate	high
Rock outcrop-Dehlinger complex	35-65	well drained	moderate	moderate
Royst stony loam, 5 to 40 percent south slopes	5-40	well drained	slow	high
Stukel-Capon loams, 15 to 25 percent slopes	15-25	well drained	moderate	high
Woodcock association, north	5-40	well drained	moderate	moderate
Woodcock association, south	5-40	well drained	moderate	moderate
Woodcock-Rock outcrop complex, 40 to 60 percent south slopes	40-60	well drained	moderate	moderate

APPENDIX D-1

Prescription for Riparian Reserve Treatments

Treatment prescriptions designed for Bly Mountain, Swan Lake Rim, and Whiteline Reservoir Riparian Reserves.

The forest treatments on the BLM matrix lands outside of the Riparian Reserves are designed to improve forest health, improve habitat for native plant and animal species, and to reduce the general fire hazard. An additional objective of the treatments is to address the ROD/RMP Management Direction to “Reduce natural fuel hazards on BLM-administered lands in rural interface areas.”

The S&Gs for Riparian Reserves allow the application of silvicultural practices to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics to attain Aquatic Conservation Strategy objectives (ROD/RMP page 14). An interdisciplinary team of resource specialists determined that silvicultural treatments could be implemented within the Riparian Reserves to meet the following objectives:

- To maintain and restore the natural species composition and structural diversity to provide habitat that supports the native plant and animal species that are dependent upon the riparian and aquatic areas.
- To maintain and restore the water quality, sediment regime, and physical integrity of the aquatic, wetland, and riparian ecosystems.
- To maintain and restore the floodplain inundation and water table elevations in meadows and wetlands.
- To reduce the risk from insects and disease by increasing the vigor of residual trees.
- To reduce the risk of catastrophic wildfire by modifying ladder fuel and crown fuel arrangements.

In order to effectively treat the range of conditions found in the Riparian Reserves, the following silvicultural prescription was designed by an interdisciplinary team of resource specialists:

- No treatments will be done within 30' of a stream, wetland, or reservoir on slopes that are less than 10% and within 50' of a stream, wetland, or reservoir on slopes that are greater than 10%.
- Above the no-treatment areas as described above, remove pine that is <16" dbh to achieve an approximate 20' x 20' spacing of the remaining pines. In small 2-4 tree clumps, a closer spacing is okay. When removing pines to achieve the 20' x 20' spacing, inferior trees will be removed first unless they provide unique wildlife structure. Components of each age and/or structure class will be retained within the thinned stands.
- Remove pines that are larger than 16" dbh only to enhance the vigor of the remaining larger trees and only if sufficient other large trees (>16" dbh) are present in the immediate vicinity.
- Remove all junipers that are larger than 7" dbh and within 20-30' of any pines unless they provide unique wildlife habitat.
- Retain all snags and downed trees within the Riparian Reserves.

The level of the treatments will vary based upon the existing conditions in the Riparian Reserves. Some areas with healthy tree stands and associated understories will receive little to no treatment. Other areas that have overstocked stands that have or are susceptible to insect and disease infestations and have high fire risk conditions will receive appropriate levels of treatment to restore or maintain healthy habitat conditions.

In areas where junipers have increased to levels where they are negatively affecting the habitat and water regimes, there will be selective removal of junipers.

The following Best Management Practices (BMPs) are designed to meet the objectives for the Riparian Reserves while also allowing for the efficient treatment of the surrounding upland areas:

Any skid trails that cross a stream in the Riparian Reserves shall be located at least 300 feet apart and shall be perpendicular to the stream. Residual slash will be placed on the skid trails upon completion of yarding.

Use of any existing roads and landings within Riparian Reserves will be reviewed and approved by the Klamath Falls Area Riparian Team (KFART). Minimal or no grading of the existing roads will be done to maintain the existing ground cover and vegetation and to decrease sediment movement.

Existing roads and existing and new skid trails, landings and stream crossings within Riparian Reserves will be waterbarred as needed and then closed and stabilized, blocked, or obliterated and stabilized after use, based on future needs.

No new roads will be constructed within Riparian Reserves unless they replace an existing road that is causing more resource damage.

All other BMPs for Riparian Reserves, Soil Resource Protection, Roads, Timber Harvest, and Silviculture from the Klamath Falls Resource Area Record of Decision and Resource Management Plan and Rangeland Program Summary, Appendix D will be used as applicable.

The implementation of the silvicultural prescription and BMPs for the Riparian Reserves will maintain and restore the productivity and resiliency of the riparian and aquatic ecosystems within the intermittent streams, wetlands, reservoirs, and meadows. These management actions are consistent with and do not prevent attainment of the Aquatic Conservation Strategy objectives found on pages 7-8 of the ROD/RMP.

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
for the
Bly Mountain / Swan Lake Rim / Whiteline Reservoir
Forest Health and Woodland Treatments Environmental Assessment
EA No. OR 014-99-06

The Bureau of Land Management, Lakeview District, Klamath Falls Resource Area, has analyzed the Bly Mountain / Swan Lake Rim / Whiteline Reservoir Forest Health and Woodland Treatments Environmental Assessment containing the following proposals and their alternatives related to:

- timber harvest treatments involving two or more timber sales,
- juniper thinning and removal treatments
- meadow and shrub land restoration
- manual and mechanical fuel reductions
- use of prescribed fire

Based on the information in the EA, it is my determination that none of the alternatives analyzed constitutes a significant impact affecting the quality of the human environment greater than those addressed in the:

- Final - Klamath Falls Resource Area Management Plan and EIS (FEIS) (Sept. 1994), and its Record of Decision and Resource Management Plan (June 2, 1995) (KFRA ROD/RMP).
- Klamath Falls Resource Area Fire Management EA#OR-014-94-09 (June 10, 1994)
- Klamath Falls Resource Area Integrated Weed Control Plan EA (July 21, 1993).
- Range Reform FEIS (August 1995).
- Standards for Rangeland Health and Guidelines For Livestock Management For Public Lands Administered By The Bureau Of Land Management In the State Of Oregon and Washington (August 12, 197).
- Final Environmental Impact Statement, Vegetation Treatment On BLM Lands in Thirteen Western States (1991).
- Interior Columbia Basin Ecosystem Management Project / Eastside Draft Environmental Impact Statement / May 1997 (ICBEMP). We have reviewed the direction of the preferred alternative in ICBEMP and feel that the proposed action meets the intent/general direction of that alternative. The final decision for ICBEMP could amend direction in this EA at some future date.

The Klamath Falls Resource Area recently completed their “Fiscal Year 1998 Annual Program Summary and Monitoring Report for the Klamath Falls Resource Area” (Feb. 1999). Results from the first three years indicates that impacts are within those analyzed in the Klamath Falls Resource Area Final Environmental Impact Statement.

Impacts to the environment would be similar to or less than those disclosed in the above mentioned documents. Therefore, it is my decision that an Environmental Impact Statement is unnecessary and will not be prepared.

/s./ Teri Raml

Teri Raml, Field Manager
Klamath Falls Resource Area

5/24/99

Date

DECISION RATIONALE

for the Bly Mtn. Timber Sale (Reference: Bly Mtn. / Swan Lake / Whiteline Reservoir Forest Health and Woodland Treatments Environmental Assessment #OR014-99-6)

The Bly Mtn. Timber Sale was prepared under the Bly Mtn. / Swan Lake / Whiteline Reservoir Forest Health and Woodland Treatments Environmental Assessment (EA) #OR014-99-6 which provides for a separate Decision Rationale to be prepared at the time each sale is proposed. This Decision Rationale applies only to the Bly Mtn. Timber Sale (the first treatment proposed under this EA), which is scheduled to be sold July 28, 1999.

DECISION FOR BLY MTN. TIMBER SALE

My decision is to implement the Proposed Action Alternative (Alternative A) of the Bly Mtn. / Swan Lake / Whiteline Reservoir Forest Health and Woodland Treatments Environmental Assessment (EA #OR-014-99-6) for the Bly Mtn. Timber Sale. This will involve harvesting approximately 1.1 million board feet (MBF) over approximately 700 acres. The EA addresses a number of issues including those raised during the public scoping and tours. Those issues that are addressed in the EA include;

- Number and size of trees to be removed (partial cutting versus clearcutting)
- Reduction of ground fuels
- Availability of firewood for the public
- Forest health problems on federal lands on the eastside
- Project Maps
- Impact on deer herds
- Access into the area and on-going trash and dumping problems in Bly Mtn. Area
- Roadless areas \geq 1000 acres
- Treatment of older forest stands
- Roads (new construction and obliteration)
- Salvage
- Soil disturbance
- Vegetation disturbance
- Use of prescribed fire
- Riparian Reserve treatments
- Watershed Analysis

Some of the public scoping issues that were raised are not applicable to the proposed treatments because the proposed treatments are outside the Northwest Forest Plan geographic boundary and the issue is non-existent in the area. These issues include:

- Soil and Vegetation disturbance in Key Watersheds (No Key Watersheds in the project area)
- Soil and Vegetation disturbance in Municipal Watersheds (No Municipal Watersheds in project area)
- Activities in late successional reserves (Outside NFP boundary)
- Surveys for "Survey and Manage Species" (Outside NFP boundary)
- Pacific Yew (No Pacific Yew in the project area)
- Northern Spotted Owl critical habitat (Outside the NFP boundary - Eastside sale)
- Fragmentation of large blocks of mature forest (No large blocks of mature forest)

The treatment area is outside the known range of the Northern Spotted Owl and the boundary of the area analyzed in the Northwest Forest Plan. Informal consultation has been completed with the U.S. Fish and Wildlife Service on the entire analysis area (Bly Mtn., Swan Lake Rim, and Whiteline Reservoir) for Lost River and short nose suckers and bald eagles. A "no effect" determination has been made for Lost River and short nose suckers and a "may effect, not likely to adversely effect" determination has been made for bald eagles. The Bly Mtn. Timber Sale is the first advertised sale within the Bly Mtn. / Swan Lake Rim / Whiteline Reservoir Forest Health and Woodland Treatment EA analysis area.

DECISION RATIONALE

The decision is consistent with the goals and objectives of the:

Final Klamath Falls Resource Area Resource Management Plan (RMP) and its Record of Decision (June 1995).

Klamath Falls Resource Area Fire Management EA (OR-014-94-09)

Klamath Falls Resource Area Integrated Weed Control Plan EA (OR-014-93-09).

The proposed treatments and projects are being planned under the direction of:

- Range Reform FEIS (August 1995)
- Standards For Rangeland Health And Guidelines For Livestock Management For Public Lands Administered By The Bureau Of Land Management In The State Of Oregon And Washington (August 12, 1997)
- Final Environmental Impact Statement, Vegetation Treatment On BLM Lands In Thirteen Western States(1991)
- Interior Columbia Basin Ecosystem Management Project/Eastside Draft Environmental Impact Statement (ICBEMP)May 1997.

A comparison of the proposed treatments with the direction of the preferred alternative in the draft EIS for ICBEMP indicates that the proposed action meets the intent and general direction of that alternative. The final decision for ICBEMP could amend direction for future treatment under this EA .

As noted in the FONSI determination, the impacts created by the above decision do not require further analysis.

Alternative A was selected because it represents the major prescription provided by the Klamath Falls RMP. All impacts identified in this assessment and identified by the general public are within the scope of the FEIS.

Soil disturbance levels continue to be monitored annually to determine if impacts exceed those analyzed in the Klamath Falls FEIS. Two seasons of pre and post treatment stand exams of RMP timber sales indicate that post-harvest stand characteristics (including canopy closure, residual large tree component, structure, and down woody material) are in compliance with the Klamath Falls RMP. In addition, post-harvest biological surveys are indicating that post-harvest stands are continuing to serve as late successional habitat. Post-harvest stand exams are also indicating that follow-up prescribe fires (underburns) are possible to further reduce fire risks.

Alternative B (exclude Swan Lake Rim) was rejected because the density and juniper encroachment issue is relevant to forest and woodlands on Swan lake Rim. If helicopter logging on Swan Lake Rim is too costly, only those commercial forest stands that can be ground based logged will be treated.

Alternative C (salvage only) was also rejected because it does not adequately address density control needed to improve stand resiliency. The Roaming Salvage Timber Sale Environmental Assessment (EA # OR-014-96-02) address salvage harvest in the Klamath Falls Resource Area.

Alternative D (no treatment) was rejected because it would not resolve the immediate need to address manual density control concerns for improved forest health in the areas covered under the environmental analysis. The only density control under Alternative D would be through the use of prescribed fire. Although prescribed fire has proven to be an effective way to reduce densities, prescribed fire may sometimes result in loss of entire patches/canopy, preferred species, and larger trees in areas where fuel loads and risks are high and uncontrollable. Deferring harvest would result in continued suppression and loss of existing shade-intolerant species (ponderosa pine, sugar pine, and Douglas-fir). Existing conditions would not significantly improve if the areas were deferred from harvest. The impacts of future harvest would not vary substantially from those anticipated under the proposed action. Under the no treatment alternative, the ongoing mortality in many existing stands may result in deteriorated stand conditions, increased fuel loads, and a corresponding increased risk of stand-replacing wildfires. Alternative D provides no economic benefit to communities associated with harvesting and processing forest products.

Mitigating Measures

A-1: During the public scoping, there was some requests that firewood be made available upon completion of harvesting. Some additional requirements will be incorporated into the Timber Sale Contract that would allow easier access to residual slash. However, the Purchaser is entitled to all wood designated for removal and there is no guarantee that there would be any firewood available if the Purchaser chooses to remove the nonmerchantable material. Some of the juniper woodland treatments should provide some fuel wood material for local residents.

A-2: One of the issues raised during the public scoping and tours was the illegal dumping of trash on public lands in the area. The Klamath Falls Resource Area is in the initial phase of planning a clean-up of illegal dump sites in the Klamath Forest Estates Area. The community will be asked to volunteer with the cleanup. In addition, the BLM's law enforcement officer is investigating the present sites to determine if hazardous material is involved and responsible parties.

____/s./ Teresa Raml _____
Teresa A. Raml
Klamath Falls Resource Area Manager

__6/30/99__
Date